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PATENT OFFICE NOTICES

Registration to Practice

The following list contains the names of persons applying for registration to practice before the United States Patent Office. Information tending to affect the eligibility of said applicants on moral, ethical, or other grounds, should be furnished the Commissioner of Patents on or before November 29, 1974.

Dunne, Gerard F., 2447 39th Place, NW., Washington, D.C. 20007

Franklin, Jordan, 2510 Virginia Ave. NW., Washington, D.C. 20037

Glynn, Michael W., 14 Plum St., Fairfield, Conn. 05430

Weissman, Milton, 310 Hillwood Ave., Falls Church, Va. 22046.

LUTRELLE F. PARKER,
Chairman, Committee on Enrollment.

Certificates of Correction for the Week of Nov. 12, 1974

Re. 28,057	3,778,517	3,808,156	3,821,734
3,477,079	3,779,075	3,808,338	3,822,169
3,491,282	3,779,333	3,808,663	3,822,179
3,538,564	3,779,494	3,808,696	3,822,773
3,546,349	3,780,091	3,808,711	3,822,872
3,563,771	3,780,118	3,809,485	3,823,297
3,592,091	3,780,418	3,809,895	3,823,446
3,607,242	3,780,765	3,809,988	3,823,502
3,612,220	3,780,771	3,810,458	3,823,550
3,634,711	3,781,987	3,810,581	3,823,637
3,651,723	3,783,119	3,811,483	3,823,659
3,669,094	3,783,138	3,811,714	3,823,704
3,671,587	3,786,056	3,812,044	3,823,820
3,695,786	3,786,172	3,812,067	3,823,861
3,696,206	3,786,261	3,812,116	3,824,220
3,699,240	3,786,406	3,812,402	3,824,313
3,703,322	3,786,849	3,812,645	3,825,270
3,705,610	3,787,009	3,812,779	3,825,720
3,712,877	3,787,208	3,813,239	3,825,796
3,715,310	3,788,052	3,813,330	3,826,434
3,719,489	3,789,010	3,813,361	3,826,798
3,720,864	3,789,071	3,813,366	3,826,799
3,723,937	3,789,572	3,814,314	3,826,815
3,723,938	3,790,425	3,814,555	3,826,932
3,724,709	3,790,673	3,814,600	3,827,258
3,725,566	3,792,901	3,814,736	3,827,952
3,726,945	3,793,035	3,814,961	3,828,083
3,727,806	3,793,338	3,815,299	3,828,101
3,729,507	3,794,278	3,815,660	3,828,483
3,729,684	3,794,299	3,815,786	3,828,688
3,730,229	3,796,172	3,815,940	3,828,795
3,730,801	3,796,687	3,816,355	3,829,407
3,733,695	3,796,765	3,816,380	3,829,412
3,733,822	3,797,307	3,816,427	3,829,463
3,738,461	3,797,938	3,816,608	3,829,574
3,738,739	3,798,117	3,816,693	3,829,776
3,740,919	3,798,238	3,816,976	3,829,795
3,743,777	3,798,282	3,816,992	3,830,028
3,744,027	3,798,371	3,817,145	3,830,120
3,744,724	3,798,591	3,817,150	3,830,230
3,745,427	3,798,614	3,817,162	3,830,754
3,746,666	3,799,095	3,817,326	3,830,883
3,750,473	3,799,115	3,817,981	3,830,988
3,751,142	3,799,740	3,817,987	3,831,385
3,751,904	3,800,002	3,818,019	3,831,627
3,752,996	3,801,254	3,818,931	3,831,905
3,760,133	3,801,551	3,819,136	3,832,283
3,760,322	3,801,776	3,819,326	3,832,367
3,760,324	3,802,301	3,819,602	3,833,509
3,763,195	3,803,478	3,819,826	3,833,569
3,765,634	3,804,067	3,819,861	3,833,602
3,766,158	3,804,267	3,820,176	3,833,758
3,768,325	3,804,991	3,820,266	3,834,192
3,770,840	3,805,059	3,820,348	3,834,235
3,770,947	3,805,360	3,820,353	3,835,407
3,771,524	3,805,461	3,820,782	3,835,475
3,771,942	3,806,036	3,820,854	3,835,594
3,772,232	3,806,431	3,820,883	3,837,551
3,775,370	3,806,489	3,820,913	3,838,164
3,775,992	3,806,558	3,820,942	3,838,313
3,776,644	3,807,422	3,820,976	3,838,385
3,777,698	3,807,805	3,821,097	
3,778,132	3,807,879	3,821,712	

Adverse Decisions in Interferences

In the designated interference involving the indicated claims of the following patents final decisions have been rendered that the respective patentees were not the first inventors with respect to the claims listed.

Patent No. 3,143,172, C. E. Wakefield, Jr., SELF-ALIGNING LANDING BASE FOR OFF-SHORE DEEP WATER DRILLING, Interference No. 94,904, decided Mar. 2, 1972, claims 1–3, 7 and 8.

Patent No. 3,315,793, V. I. Yakubovich, VIBRATORY ELECTROMAGNETIC DRIVE, Interference No. 96,587, decided Sept. 27, 1972, claims 1–3.

Patent No. 3,340,443, H. F. Rieth and G. O'Leary, COLOR TELEVISION DEGAUSSING APPARATUS, Interference No. 97,944, decided Jan. 24, 1974, claims 1–3, 5 and 7.

Patent No. 3,513,033, J. Watanabe, S. Hosoi, M. Kuwazaki, T. Sawai and H. Ueno, DRY CELL, Interference No. 97,589, decided June 10, 1974, claims 1–4, 6 and 12.

Patent No. 3,522,899, F. A. Siemonsen and A. L. Garriques, EASY OPEN MEANS FOR BOTTLES AND THE LIKE, Interference No. 97,684, decided June 4, 1974, claims 22–24.

Patent No. 3,555,360, S. C. Lee and C. E. Brockway, PHASE CONTROLLED GROUND FAULT CIRCUIT INTERRUPTER, Interference No. 97,733, decided May 28, 1974, claims 1, 2, 4, 5 and 7.

Patent No. 3,657,328, N. Finch, PGE_1 OXIMES, Interference No. 98,412, decided July 18, 1974, claim 1.

Patent No. 3,658,097, R. C. Martin and M. E. Sixt, CORRUGATED TUBING, Interference No. 98,157, decided July 8, 1974, claims 1–7.

Patent No. 3,673,856, P. L. Panigati, FLUID OPERATED SENSOR, Interference No. 98,414, decided July 30, 1974, claims 1–12 and 14–16.

Patent No. 3,684,054, R. D. Lemmerman, JET ENGINE EXHAUST AUGMENTATION UNIT, Interference No. 98,103, decided July 18, 1974, claim 3.

Disclaimers

3,523,798.—*Ralph L. Kail,* Edinburg, Ind. LIQUID FEED SUPPLEMENT FOR RUMINANTS AND METHOD OF PREPARATION. Patent dated Aug. 11, 1970. Disclaimer filed July 26, 1974, by the assignee, *W. R. Grace & Co.*

Hereby enters this disclaimer to claims 7, 8, 9, 10, 13 and 14 of said patent.

3,732,952.—*Anthony Asquith,* Nuneaton, England. BRAKE ADJUSTERS. Patent dated May 15, 1973. Disclaimer filed Sept. 11, 1974, by the assignee, *Girling Limited.*

Hereby enters this disclaimer to claims 4 and 7 of said patent.

3,745,482.—*Chandra K. N. Patel,* Chatham, N.J. CARBON DIOXIDE LASER EMPLOYING MULTIPLE GASES INCLUDING HELIUM. Patent dated July 10, 1973. Disclaimer filed Sept. 14, 1973, by the assignee, *Bell Telephone Laboratories Incorporated.*

Hereby disclaims the portion of the term of the patent subsequent to July 27, 1988.

3,764,736.—*Richard P. Kosky,* East Granby, Conn., and *Preston W. Averill, Jr.,* Springfield, Mass. REMOTE VISUAL EXAMINATION APPARATUS. Patent dated Oct. 9, 1973. Disclaimer filed Aug. 30, 1974, by the assignee, *Combustion Engineering, Inc.*

Hereby enters this disclaimer to claim 1 of said patent.

3,778,120.—*Magnus F. Hagen,* Fullerton, and *Fred H. Ordan,* Whittier, Calif. PRECISION TELESCOPING BALL BEARING DRAWER SLIDE SUSPENSION FOR WOOD AND METAL FURNITURE PRODUCTION. Patent dated Dec. 11, 1973. Disclaimer filed Aug. 12, 1974, by the inventors.

Hereby enter this disclaimer to claims 1, 2, 3, 4 and 5 of said patent.

3,791,393.—*David John Baldwin,* London, England. TANK CLEANING APPARATUS. Patent dated Feb. 12, 1974. Disclaimer filed Aug. 30, 1974, by the assignee, *Sybron Corporation.*

Hereby enters this disclaimer to claims 1, 2, 3 and 5 of said patent.

3,793,268.—*Werner Dietrich,* Cologne-Stammheim, *Konrad Uhlig* and *Kuno Wagner,* Leverkusen, *Dieter Maaben* and *Horst Conrad,* Dormagen, and *Heinrich Bormann* and *Helmut Picchota,* Leverkusen, Germany. PROCESS FOR THE PRODUCTION OF POLYURETHANE FOAM RESINS. Patent dated Feb. 19, 1974. Disclaimer filed Aug. 30, 1974, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enters this disclaimer to claims 1 through 7 of said patent.

National Technical Information Service

GOVERNMENT-OWNED INVENTIONS

Notice of Availability for Licensing

The inventions listed below are owned by the U.S. Government and are avilable for licensing in accordance with the licensing policy of each agency-sponsor.

Copies of patents are available from the Commissioner of Patents, Washington, D.C. 20231, at $.50 each.

Copies of patent applications, either paper copy (PC) or microfiche (MF), can be purchased from the National Technical Information Service (NTIS), Springfield, Va. 22161, at the prices cited. Requests for copies of patent applications must include the patent application number and the title. Claims are deleted from patent application copies sold to the public to avoid premature disclosure in the event of an interference before the Patent Office. Claims and other technical data can usually be made available by the agency which filed the case to serious prospective licensees.

Requests for licensing information should be directed to the address cited below for each agency.

DOUGLAS J. CAMPION,
Patent Program Coordinator,
National Technical Information Service.

DEPARTMENT OF THE ARMY
Chief, Patents Division, Washington, D.C. 20310

Patent 3,757,806. Pulsating Hydrojet Lavage Device. Filed Jan. 19, 1972. Patented Sept. 11, 1973. Not available NTIS.

Patent 3,758,919. Hinge. Filed Aug. 19, 1971. Patented Sept. 18, 1973. Not available NTIS.

Patent 3,764,947. High-Precision Variable Radio Frequency Coil. Filed Nov. 1, 1972. Patented Oct. 9, 1973. Not available NTIS.

Patent 3,768,100. Cold Weather Face Mask. Filed May 23, 1972. Patented Oct. 30, 1973. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent 3,796,589. Method of Vapor Seal Coating Plutonium Oxide Particles With Molybdenum. Filed July 28, 1972. Patented Mar. 12, 1974. Not available NTIS.

Patent 3,799,790. Metal Carbide Spherules Encapsulated Within a Pyrolytic Carbon Shell. Filed Sept. 10, 1970. Patented Mar. 26, 1974. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt. Branch,
Federal Bldg., Hyattsville, Md. 20782

Patent application 363,295. Synthetic Hormones for Insect Control. Filed May 23, 1973. PC $5.25/MF $2.25.

Patent 3,716,371. Separator for Negatively Phototactic Housefly Larvae From Chicken Hen Excreta. Filed Feb. 8, 1971. Patented Feb. 13, 1973. Not available NTIS.

Patent 3,717,706. Attractants for the Yellow Jacket Wasp (Vespula SPP: Vespidae). Filed June 16, 1970. Patented Feb. 20, 1973. Not available NTIS.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
National Institutes of Health, Chief, Patent Branch,
Bethesda, Md. 20014

Patent application 492,928. Method of Radiation Therapy Treatment Planning. Filed July 29, 1974. PC $4.25/MF $2.25.

Patent 3,826,244. Thumbtack Microelectrode and Method of Making Same. Filed July 20, 1973. Patented July 30, 1974. Not available NTIS.

U.S. ATOMIC ENERGY COMMISSION
Assistant General Counsel for Patents,
Washington, D.C. 20545

Patent application 458,365. Self Adjusting Load Balancing Pneumatic Hoist. Filed Apr. 5, 1974. PC $4/MF $2.25.

Patent 3,781,716. Biphase Radio-Frequency Modulator. Filed Oct. 27, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,781,733. Low Heat Conductant Temperature Stabilized Strutucal Support. Filed Dec. 21, 1972. Patented Dec. 25, 1973. Not available NTIS.

Patent 3,793,408. Method for the Purification of Bis(2-Ethyl-Hexyl) Phosphoric Acid. Filed Jan. 20, 1972. Patented Feb. 19, 1974. Not available NTIS.

Patent 3,793,433. Extraction of Lithium From Natural Brines Using a Beta Diketone and Trioctylphosphine Oxide. Filed July 23, 1971. Patented Feb. 19, 1974. Not available NTIS.

U.S. DEPARTMENT OF AIR FORCE
AF/JACP, Washington, D.C. 20314

Patent 3,739,301. Single Diode Single Sideband Modulator. Filed June 30, 1971. Patented June 12, 1973. Not available NTIS.

U.S. DEPARTMENT OF AGRICULTURE
Chief, Research Agreements and Patent Mgmt. Branch,
General Services Division, Hyattsville, Md. 20782

Patent application 275,009. Metallic Dibasic Fatty Soap Based Greases. Filed July 25, 1972. PC $4/MF $2.25.

U.S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Chief, Patent Branch, Bethesda, Md. 20014

Patent application 453,141. Catalytic Hydrogenolysis of Protected Sulfur Compounds. Filed Mar. 20, 1974. PC $4/MF $2.25.

Patent application 478,547. Phenylpiperidines. Filed June 11, 1974. PC $4/MF $2.25.

Patent application 483,871. Filtering Apparatus. Filed June 17, 1974. PC $4/MF $2.25.

Patent application 483,872. Method and Apparatus for Cutting Cylinders of Gelatinous Materials Into Discs of Precise Thickness. Filed June 27, 1974. PC $4/MF $2.25.

Patent application 491,610. Production of Angular Alkylated Polycyclides by Electrochemical Annelation. Filed July 24, 1974. PC $4.25/MF $2.25.

DEPARTMENT OF THE ARMY
Chief, Patents Division,
Office of the Judge Advocate General,
Washington, D.C. 20310

Patent 3,740,196. Chemical Spot Test System. Filed Mar. 30, 1971. Patented June 19, 1973. Not available NTIS.

Patent 3,741,882. Method of Electrodepositing a Lusterless Electrically Conductive Coating. Filed Dec. 7, 1971. Patented June 26, 1973. Not available NTIS.

Patent 3,742,891. Disc Anchor. Filed Dec. 30, 1971. Patented July 3, 1973. Not available NTIS.

Patent 3,744,272. Refrigeration System With Heat Exchanger Employing Eutectic. Filed Dec. 22, 1971. Patented July 10, 1973. Not available NTIS.

Patent 3,744,534. Protective Clothing Fabric. Filed Apr. 12, 1972. Patented July 10, 1973. Not available NTIS.

Patent 3,748,108. Thermally Activated Spring With Improved Thermal Properties. Filed Apr. 7, 1970. Patented July 24, 1973. Not available NTIS.

Patent 3,748,161. Combustible Water Repellent Coating. Filed Mar. 2, 1971. Patented July 24, 1973. Not available NTIS.

Patent 3,751,301. Reserve Battery Electrodes Using Bonded Active Materials. Filed July 13, 1970. Patented Aug. 7, 1973. Not available NTIS.

Patent 3,751,307. Thermal-Mechanically Processed Low-Alloy Steel. Filed Apr. 26, 1972. Patented Aug. 7, 1973. Not available NTIS.

Dedications

3,319,344.—*George F. Sachsel,* Worthington, and *William H. Mink,* Columbus, Ohio. FREEZE DRYING LIQUID FOODS. Patent dated May 16, 1967. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,331,120.—*Paul D. Frost,* Columbus, Ohio. PROCESS FOR COMPOSITE METAL SHAPES. Patent dated July 18, 1967. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation.*

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,365,599.—*Donald E. Brzezinski*, Brookfield, and *Raymond L. Watts*, Mukwonago, Wis. MAGNETIC CIRCUIT. Patent dated Jan. 23, 1968. Dedication filed Mar. 2, 1972, by the assignee, *Wehr Corporation*.

Hereby dedicates claims 10, 11, and 14 of said patent.

3,371,629.—*Richard B. Engdahl, Herbert R. Hazard* and *Glen M. Hein*, Columbus, Ohio. MOBILE INCINERATOR. Patent dated Mar. 5, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,377,695.—*Paul J. Gripshover*, Columbus, Ohio. BONDING PROCESS FOR FABRICATING AND SHAPING STRUCTURES. Patent dated Apr. 16, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,382,093.—*Herman Nack*, Columbus, Ohio. FLUIDIZED BED COATING OF FRAGILE BODIES. Patent dated May 7, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,391,194.—*Emil A. Lawton*, Columbus, Ohio, *Earl A. Weilmuenster*, Kenmore, N.Y., and *Arthur Levy*, Worthington, Ohio. Patent dated July 2, 1968. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,460,972.—*Herman Nack*, Columbus, Ohio. LIQUID ENCAPSULATION. Patent dated Aug. 12, 1969. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,505,238.—*Robert W. Liddell*, Pittsburgh, Pa. METHODS AND COMPOSITIONS FOR INHIBITING SCALE IN SALINE WATER EVAPORATORS. Patent dated Apr. 7, 1970. Dedication filed Aug. 9, 1974, by the assignee, *Calgon Corporation*.

Hereby dedicates to the Public the remaining term of said patent.

3,580,089.—*Serge Ramseier*, Carouge, Geneva, Switzerland. MOTION CONVERTING MECHANISM. Patent dated May 25, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,602,024.—*Alvin M. Sabroff*, Columbus, and *Robert J. Fiorentino*, Worthington, Ohio. HYDROSTATIC BENDING AND DIE FORMING. Patent dated Aug. 31, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,602,687.—*Robert E. Pollock*, Hilliard, Ohio. ARC LENGTH CONTROL. Patent dated Aug. 31, 1971. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,639,206.—*Edgar L. Spruill*, Jonesboro, La. TREATMENT OF WASTE WATER FROM ALKALINE PULPING PROCESSES. Patent dated Feb. 1, 1972. Dedication filed Aug. 20, 1974, by the assignee, *Continental Can Company, Inc.*

Hereby dedicates the entire term of said patent to the Public.

3,662,811.—*Paul Esslinger*, Frankfurt am Main, and *Rudolf Walkling*, Frankfurt am Main-Bockenheim, Germany. METHOD OF CASTING BY CATCHING FREE-FALLING MOLTEN METAL MASS. Patent dated May 16, 1972. Dedication filed Aug. 2, 1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,686,096.—*Aharon Zeev Hed*, Columbus, and *Paul J. Freud*, Worthington, Ohio. POLARONIC SEMICONDUCTOR DEVICES. Patent dated Aug. 22, 1972. Dedication filed Aug. 2,1974, by the assignee, *The Battelle Development Corporation*.

Hereby dedicates to the People of the United States the entire remaining term of said patent.

3,732,717.—*Dieter Ahlvers*, Mellendorf, Germany. APPARATUS FOR THE PRODUCTION OF HELICALLY CORRUGATED METAL TUBING. Patent dated May 15, 1973. Dedication filed July 23, 1974, by the assignee, *Kabel- und Metallwerke Gutchoffnungshutte Aktiengesellschaft*.

Hereby dedicates to the Public the entire remaining term of said patent.

3,781,228.—*Robert William McDonnell*, Teaneck, and *Maung Hla Win*, Berkeley Heights, N.J. LAUNDRY PRODUCT CONTAINING ENZYME. Patent dated Dec. 25, 1973. Dedication filed Sept. 23, 1973, by the assignee, *Colgate-Palmolive Company*.

Hereby dedicates to the Public the entire term of said patent.

PATENT EXAMINING CORPS

WILLIAM FELDMAN, Acting Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF OCTOBER 12, 1974

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL CHEMISTRY AND PETROLEUM CHEMISTRY, GROUP 110—M. STERMAN, Director. Inorganic Compounds; Inorganic Compositions; Organo-Metal and Organo-Metalloid Chemistry; Metallurgy; Metal Stock; Electro Chemistry; Batteries; Hydrocarbons; Mineral Oil Technology; Lubricating Compositions; Gaseous Compositions; Fuel and Igniting Devices.	10-10-73
GENERAL ORGANIC CHEMISTRY, GROUP 120—R. F. BURNETT, Acting Director. Heterocyclic, Amides; Alkaloids; Azo; Sulfur; Misc. Esters; Carbohydrates; Herbicides; Poisons; Medicines; Cosmetics; Steroids; Oxo and Oxy; Quinones; Acids; Carboxylic Acid Esters; Acid Anhydrides, Acid Halides.	9-10-73
HIGH POLYMER CHEMISTRY, PLASTICS AND MOLDING, GROUP 140—A. P. KENT, Director. Synthetic Resins; Rubber; Proteins; Macromolecular Carbohydrates; Mixed Synthetic Resin Compositions; Synthetic Resins With Natural Polymers and Resins; Natural Resins; Reclaiming; Pore-Forming; Compositions (Part) e.g.: Coating; Molding; Ink; Adhesive and Abrading Compositions; Molding, Shaping, and Treating Processes.	12-13-73
COATING AND LAMINATING, BLEACHING, DYEING AND PHOTOGRAPHY, GROUP 160—A. L. LEAVITT, Director. Coating; Processes and Misc. Products; Laminating Methods and Apparatus; Stock Materials; Adhesive Bonding; Special Chemical Manufactures; Special Utility Compositions; Bleaching; Dyeing and Photography.	1-17-74
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 170—R. FRIEDMAN, Director. Fertilizers; Foods; Fermentation; Analytical Chemistry; Reactors; Sugar and Starch; Paper Making; Glass Manufacture; Gas; Heating and Illuminating; Cleaning Processes; Liquid Purification; Distillation; Preserving; Liquid, Gas, and Solid Separation; Gas and Liquid Contact Apparatus; Refrigeration; Concentrative Evaporators; Mineral Oils Apparatus; Misc. Physical Processes.	11-7-73
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—W. L. CARSON, Director. Generation and Utilization; General Applications; Conversion and Distribution; Heating and Related Art Conductors; Switches; Photography; Motion Pictures; Illumination; Horology; Acoustics; Recorders; Weighing Scales.	3-6-74
SPECIAL LAWS ADMINISTRATION, GROUP 220—C. D. QUARFORTH, Director. Ordnance, Firearms and Ammunition; Radar, Underwater Signalling, Directional Radio, Torpedoes, Seismic Exploring, Radio-Active Batteries; Nuclear Reactors, Powder Metallurgy, Rocket Fuels; Radio-Active Material.	4-2-73
INFORMATION TRANSMISSION, STORAGE AND RETRIEVAL, GROUP 230—J. F. COUCH, Director. Communications; Multiplexing Techniques; Facsimile; Data Processing, Computation and Conversion; Storage Devices and Related Arts.	12-3-73
RECEPTACLES, SANITATION AND CLEANING, WINDING, AND MEASURING, GROUP 240—N. ANSHER, Director. Receptacles; Joint Packing; Conduits; Plumbing Fixtures; Textile Spinning; Food; Agitating; Cleaning; Pressing; Geometrical Instruments; Sound Recording; Winding and Reeling; Measuring and Testing; Indicating.	1-2-74
ELECTRONIC COMPONENT SYSTEMS AND DEVICES, GROUP 250—L. FORMAN, Director. Semi-Conductor and Space Discharge Systems and Devices; Electronic Component Circuits; Wave Transmission Lines and Networks; Optics; Radiant Energy; Measuring.	12-13-73
DESIGNS, GROUP 290—C. D. QUARFORTH, Director. Industrial Arts; Household, Personal and Fine Arts.	6-4-73
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—G. M. FORLENZA, Director. Conveyors; Hoists; Elevators; Article Handling Implements; Store Service; Sheet and Web Feeding; Dispensing; Fluid Sprinkling; Fire Extinguishers; Coin Handling; Check Controlled Apparatus; Classifying and Assorting Solids; Boats; Ships; Aeronautics; Motor and Land Vehicles and Appurtenances; Brakes; Railways and Railway Equipment.	11-19-73
MATERIAL SHAPING, ARTICLE MANUFACTURING, TOOLS, GROUP 320—D. J. STOCKING, Director. Manufacturing Processes, Assembling, Combined Machines, Special Article Making; Metal Deforming; Sheet Metal and Wire Working; Metal Fusion—Bonding, Metal Founding; Metallurgical Apparatus; Plastics Working Apparatus; Plastic Block and Earthenware Apparatus; Machine Tools for Shaping or Dividing; Work and Tool Holders, Woodworking; Tools: Cutlery; Jacks.	1-2-74
AMUSEMENT, HUSBANDRY, PERSONAL TREATMENT, INFORMATION, GROUP 330—R. E. PULFREY, Director. Amusement and Exercising Devices; Projectors; Animal and Plant Husbandry; Butchering; Earth Working and Excavating; Fishing, etc.; Tobacco; Artificial Body Members; Dentistry; Jewelry; Surgery; Toiletry; Printing; Typewriters; Stationery; Information Dissemination.	11-28-73
HEAT, POWER, AND FLUID ENGINEERING, GROUP 340—B. R. GAY, Director. Power Plants; Combustion Engines; Fluid Motors; Reaction Motors; Pumps; Rotary Engines and Pumps; Heat Generation and Exchange; Refrigeration; Ventilation; Drying; Temperature and Humidity Regulation; Machine Elements; Couplings; Gearing; Bearings; Clutches; Power Transmission; Fluid Handling and Control; Lubrication.	1-29-74
GENERAL CONSTRUCTIONS, TEXTILES AND MINING, GROUP 350—M. M. NEWMAN, Director. Joints; Fasteners; Rod, Pipe and Electrical Connectors; Miscellaneous Hardware; Locks; Building Structures; Closure Operators; Bridges; Closures; Earth Engineering; Drilling; Mining; Furniture; Supports; Cabinet Structures; Centrifugal Separations; Coating; Textiles; Apparel and Shoes; Sewing Machines.	3-11-74

Expiration of patents: The patents within the range of numbers indicated below expire during September 1974, except those which may have expired earlier due to shortened terms under the provisions of Public Law 690, 79th Congress, approved August 8, 1946 (60 Stat. 940) and Public Law 619, 83rd Congress, approved August 23, 1954 (68 Stat. 764), or which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents..... Numbers 2,807,804 to 2,811,721, inclusive
Plant Patents..... Numbers 1,646 to 1,655, inclusive

REISSUES

NOVEMBER 12, 1974

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

28,236

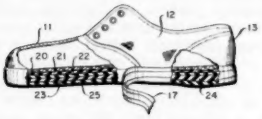
FOOTWEAR ASSEMBLY

Willis R. Hendricks and Richard L. Danforth, Palos Verdes Peninsula, Harbor City, Calif., assignors to Shell Oil Company, New York, N.Y.

Original No. 3,589,036, dated June 29, 1971, Ser. No. 880,257, Jan. 16, 1970, which is a continuation-in-part of application Ser. No. 698,990, Jan. 12, 1968, which is a continuation-in-part of application Ser. No. 423,724, Jan. 6, 1965, both now abandoned. Application for reissue May 15, 1972, Ser. No. 253,214

Int. Cl. A43b *13/04*

U.S. Cl. 36—2.5 R **11 Claims**



1. A footwear construction including an upper component and a sole component wherein at least one of said components comprises unvulcanized-block copolymer *having the structure A—B—A* of the group consisting of polymers of a monovinyl arene and of a conjugated diene, and hydrogenated derivatives of said polymers wherein the original unsaturation has been reduced at least 50 percent by hydrogenation, the monovinyl arene blocks *A* having an average molecular weight between about 9,000 and about 30,000 and the conjugated diene blocks *B* having an average molecular weight between about *40,000* [35,000] and about *80,000* [130,000] the weight ratio of monovinyl arene polymer blocks to conjugated diene polymer blocks being between about 25:75 and about [60:40] *40:60*.

28,237

FIELD GENERATING INDUCTION DEVICE

Max Baermann, 506 Bensberg, Bejirk, Cologne Germany

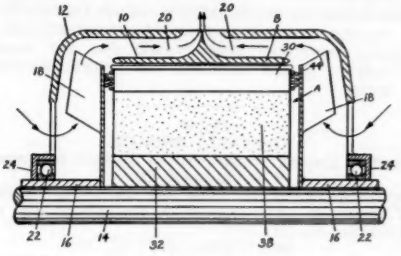
Original No. 3,601,641, dated Aug. 24, 1971, Ser. No. 5,889, Jan. 26, 1970. Application for reissue Apr. 3, 1973, Ser. No. 347,612

Claims priority, application Germany, Jan. 24, 1969, P 19 03 528.0

Int. Cl. H02k *49/02*

U.S. Cl. 310—93 **15 Claims**

1. An eddy current and/or induction brake or clutch comprising: a braking inductor; a ferromagnetic eddy current conductor adjacent said inductor and separated therefrom by an airgap; said inductor and conductor being arranged for relative rotation with respect to each other; said inductor having a plurality of pole shoes of alternating magnetic polarity arranged in an annular ring; a plurality of permanent magnets having a pair of opposite pole surfaces disposed intermediate adjacent shoes; and electromagnetic means operatively associated with said permanent magnets for selectively regulating the magnetic field generated by said inductor from a zero magnetic field



in the airgap to a field greater than the permanent magnets themselves.

28,238

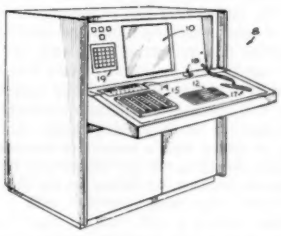
CONTROL/DISPLAY APPARATUS

Robert A. Koster, Santa Ana, Calif., assignor to The Bunker-Ramo Corp., Oak Brook, Ill.

Original No. 3,389,404, dated June 18, 1968, Ser. No. 488,639, Sept. 20, 1965. Application for reissue May 7, 1973, Ser. No. 358,039

Int. Cl. G06f *3/14*

U.S. Cl. 340—172.5 **19 Claims**



1. A control and display console adapted to be used by an operator for communication with a digital computer, said console including:

a processor section;

said processor section including a memory having a plurality of word storage locations, first and second registers, and a control means;

said memory storing a plurality of instruction words and a plurality of operand words, said instruction words each defining an operation to be performed with respect to an identified one *or more* of said words, said operand words defining symbol and position information;

means for sequentially accessing said instruction words;

said control means being responsive to said accessed instruction words for causing the operations defined thereby to be performed on the identified words;

said instruction words including at least one display instruction word identifying an initial memory location in a string of memory locations;

said control means being responsive to said display instruction for sequentially accessing said string of memory locations;

means for storing position information accessed from said string of memory locations in said first and second registers;

a display section;

said display section including a cathode ray tube having horizontal and vertical deflection means; and

means respectively coupling said first and second registers to said horizontal and vertical deflection means.

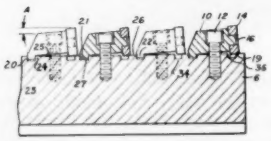
28,239
INDEXABLE BROACH

Hubert J. Dupuis, Warren, Mich., assignor to Carmet Co., Pittsburgh, Pa.

Original No. 3,656,220, dated Apr. 18, 1972, Ser. No. 176, Jan. 2, 1970. Application for reissue May 11, 1973, Ser. No. 359,367

Int. Cl. B26d *1/00, 1/12*

U.S. Cl. 29—95.1 **15 Claims**



1. Apparatus for broaching comprising a broaching block, a reversible and indexable cutting tool having a bore extending therethrough and having sides disposed between reversible cutting edges for each index position, a tool holder for said cutting tool superimposed on the outer surface of said broaching block and projecting therefrom, a locating post projecting from said tool holder at an angle to said surface and through said bore in the cutting tool for positioning the tool on said holder at an inclination to said surface, and means detachably securing said tool holder to the broaching block, the broaching block being provided with a transverse shoulder forming gauging means engaging the end of the tool holder opposite said post to position the holder on the block, and the broaching block also being provided with a transverse gauging recess having a wall with an edge engaging the cutting tool along a side between inactive cutting edges adjacent the broaching block to project those edges.

28,240
PHOTOSENSITIVE ELEMENTS CONTAINING PHOTOOXIDANTS CONTAINING HETEROCYCLIC NITROGEN ATOM SUBSTITUTED BY AN ALKOXY OR AN ACYLOXY GROUP

Philip W. Jenkins, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

No Drawing. Original No. 3,615,568, dated Oct. 26, 1971, Ser. No. 859,205, Sept. 18, 1969. Application for reissue Sept. 10, 1973, Ser. No. 396,290

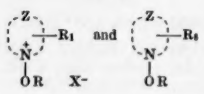
Int. Cl. G03c *1/40, 1/64*

U.S. Cl. 96—90 R **15 Claims**

2. A photosensitive element comprising a support containing a composition comprising

a. an essentially colorless, oxidizable, nitrogen-containing, organic color generator, which when contained in said composition, is stable to oxidation by atmospheric oxygen under normal room and storage conditions but which is oxidizable to a colored material and

b. a photo-oxidant which is capable of oxidizing said color generator to a colored material when subjected to actinic radiation, said photo-oxidant having a formula selected from the group consisting of:



wherein:

R_1 is selected from the group consisting of:

a. a methine linkage terminated by a heterocyclic nucleus of the type contained in cyanine dyes,

[b. an alkyl radical,]

b. [c.] an anilinovinyl radical,

[d. a hydrogen atom,

e. an aryl radical,

f. an aldehyde group,] and

c. [g.] a styryl radical;

R_8 is selected from the group consisting of:

a. a methine linkage terminated by a heterocyclic nucleus of the type contained in merocyanine dyes and

b. an allylidene radical *selected from the group consisting of a cyanoallylidene radical, an alkylcarboxyallylidene radical and an alkylsulfonylallylidene radical;*

[R] R_1 is selected from the group consisting of:

a. an alkyl radical and

b. an acyl radical;

[X] X^- is an acid anion, and,

Z represents the atoms necessary to complete a five- to six-membered heterocyclic nucleus.

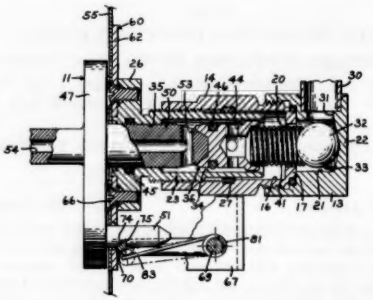
28,241
COUPLER ASSEMBLY

Bidwell C. Cranage, Ferguson, Mo., assignor to Chemetron Corporation, Chicago, Ill.

Original No. 3,477,105, dated Nov. 11, 1969, Ser. No. 329,319, Dec. 9, 1963. Application for reissue Nov. 16, 1973, Ser. No. 416,714

Int. Cl. F16b *21/06;* **F16l** *37/28*

U.S. Cl. 24—230 AU **3 Claims**



1. A latching device for a pair of relatively movable members comprising:

(a) a latch plug having a catch abutment and adapted to be mounted on one member,

(b) a latching unit adapted to be mounted on the other member including a cover plate with an opening therethrough to receive the latch plug,
(c) a bracket secured to the cover plate,
(d) a latch arm including an integral hinge portion pivotally mounted to the bracket and an integral latch portion disposed in spaced relation from the hinge portion and extending across the plate opening in the path of the plug, the latch portion engaging the plug abutment when the plug is inserted,
(e) resilient means tending to pivot the latch arm and to urge the latch portion into the path of the plug for connection to the abutment, and
(f) the latch arm having an integral lever portion extending through the cover plate for actuation to pivot the latch arm and release the plug,
(g) the bracket including a flange,
(h) the latch arm being pivoted to the flange, and
(i) the latching unit including a stop means engageable by the latch arm to determine the latch portion position in alignment with the plate opening and the path of the plug.

28,242

METHOD FOR MANUFACTURING TETRONIC ACID

Karl-Josef Boosen, La Neuveville, Switzerland, assignor to Lonza Ltd., Gampel, Valais, Switzerland

No Drawing. Original No. 3,758,515, dated Sept. 11, 1973, Ser. No. 40,699, May 26, 1970. Application for reissue Feb. 7, 1974, Ser. No. 441,028
Claims priority, application Switzerland, May 28, 1969, 8,076/69
Int. Cl. C07d *5/06*
U.S. Cl. 260—343.6 **8 Claims**

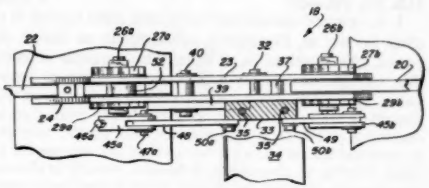
1. A process for the preparation of tetronic acid which comprises the steps of:
(a) reacting a lower alkyl ester of gamma-chloroacetoacetic acid with an aryl amine, selected from the group consisting of aniline, chloroaniline and toluidine in a reaction inert aromatic hydrocarbon at a temperature of from about 70° C. to 140° C. to form the corresponding beta-arylamino crotonic acid lactone,
(b) separating said lactone from said aromatic hydrocarbon,
(c) reacting said lactone with an alkali metal hydroxide to form the alkali metal salt of tetronic acid and
(d) converting said salt to tetronic acid by reaction with mineral acid.

28,243

BOLTED CONTACT SWITCH WITH CAM MEANS FOR OVERCOMING MAGNETIC PINCH FORCES ON CONTACT BLADES

Tadeusz J. Rys, Edgewood, Ky., assignor to Square D Company, Park Ridge, Ill.

Original No. 3,787,654, dated Jan. 22, 1974, Ser. No. 336,147, Feb. 26, 1973. Application for reissue Apr. 1, 1974, Ser. No. 457,044
Int. Cl. H01l *1/50*
U.S. Cl. 200—256 **8 Claims**



1. In a bolted contact switch having clamping means including a [pivotally mounted] threaded stud [and a pair of nuts carried by] *pivotally mounted between* a pair of spaced movable contact blades, *threaded means to receive said stud, said threaded means being operatively associated with at least one of said spaced contact blades* for clamping a stationary contact blade therebetween, cooperative cam means [fixedly] mounted respectively on the threaded stud of the clamping means between the movable contact blades and on at least one of the movable contact blades and operable to force the movable contact blades apart when the stud is pivoted in an unclamping direction.

PLANT PATENTS

GRANTED NOVEMBER 12, 1974

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

3,647
ROSE PLANT

Georges Alphonse Delbard, Paris, France, assignor to The Conard-Pyle Company, West Grove, Pa.

Filed Dec. 6, 1973, Ser. No. 422,147
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—25 **1 Claim**

1. A new and distinct variety of rose plant typical of the class known as Floribunda substantially as herein disclosed, characterized as to novelty by a unique combination of vigorous, freely branched and compact growth habit, giving the plant rounded form and covered with abundant foliage of medium green color and showing resistance to common rose diseases, with greater tolerance to seasonal temperature variations than the average for the class; bearing an abundance of flowers, usually in clusters, continuously through the season, these flowers being semi-double with attractive form and of distinctive pink color with shadings of yellow and red giving an overall coral effect.

3,648
ROSE PLANT

Gijsbert de Ruiter, Hazerswoude, Netherlands, assignor to The Conrad-Pyle Company, West Grove, Pa.

Filed May 31, 1973, Ser. No. 365,441
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—17 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a vigorous, upright plant of even, balanced, attractive growth habit, covered with dark green glossy foliage in abundance and with flowers borne freely, usually one to a stem, with few prickles, and having an urn shaped bud of attractive salmon-orange color opening to a fully double flower of high center, medium size of the same salmon-orange color and carried above the foliage continuously through the summer in unusually large quantities, and with the plant having above average resistance to common garden diseases and with more winter-hardiness when compared to other varieties characteristic of the class.

3,649
ROSE PLANT

Dorothy Jean Searles Bailey, 1101 Lomita Drive, Bakersfield, Calif. 93307

Filed May 10, 1973, Ser. No. 359,096
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—14 **1 Claim**

1. A new and distinct variety of rose plant of the Hybrid Tea class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of a neat upright plant, moderately vigorous of typical Hybrid Tea habit; medium large, Dark Green foliage that abundantly covers the plant; abundant bloom production from early spring until fall, especially during the warmest periods; flowers usually borne singly to each stem, the stems being strong and long; thick velvety petals that have good resistance to spotting and bruising; urn shaped large buds that slowly open into large high-centered blooms of very regular petal conformation; clean white petal color that shades into Naples Yellow 403/3 and lighter at the base; and a slight clear Sweetbriar fragrance.

3,650
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Aug. 9, 1973, Ser. No. 387,190
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its ovoid, chrome yellow bud, high centered Lemon yellow flower, dark semi-glossy foliage, and high rate of production of flowers borne mostly on stems of medium length.

3,651
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed Sept. 7, 1973, Ser. No. 395,248
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—24 **1 Claim**

1. A new and distinct cultivar of rose plant of the floribunda class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of its pointed-ovoid bud; Buttercup yellow bud color developing into Empire yellow blooms; well formed flowers of 40–50 petals; and unusual licorice like fragrance.

3,652
ROSE PLANT

William A. Warriner, Tustin, Calif., assignor to Jackson & Perkins Company, Medford, Oreg.

Filed May 16, 1973, Ser. No. 360,751
Int. Cl. A01h *5/00*

U.S. Cl. Plt.—6 **1 Claim**

1. A new and distinct variety of rose plant of the climbing class, substantially as herein shown and described, characterized particularly as to novelty by the unique combination of an extremely vigorous and everblooming habit of growth; production of climbing canes which bloom on the terminals and later bloom on the lateral growth, a flower color of a brighter tone but near Wilson's Currant Red.

PATENTS

GRANTED NOVEMBER 12, 1974

GENERAL AND MECHANICAL

3,846,844
REVERSIBLE FUR GARMENT

Ernest Graf, Beechhurst Queens, N.Y., assignor to Ben Kahn Furs Corp., New York, N.Y.

Filed July 18, 1973, Ser. No. 380,367
Int. Cl. A41d *5/00*
U.S. Cl. 2—93 **14 Claims**

1. A reversible garment having on one side a surface predominantly of natural animal fur and on the reverse side thereof a dressed or tanned surface, said garment being comprised of:

a. pre-cut sections of natural fur skins having on one side a surface of natural animal fur and on the reverse side thereof a dressed or tanned surface;

b. means to secure said sections together along marginal portions thereof to form finished seams on the fur side; and

c. elongated cover sections positioned over the seams on the dressed or tanned side of the garment in a manner which conceals and protects the seams on said tanned side while providing an aesthetically pleasing appearance corresponding to the configurations of said sections.

3,846,845
PROCESS OF CURING CHEMICALLY TREATED CELLULOSIC FABRIC

Robert D. Englert, Corona Del Mar, and Lester P. Berriman, Irvine, both of Calif., assignors to Koratron Company, Inc., San Francisco, Calif.

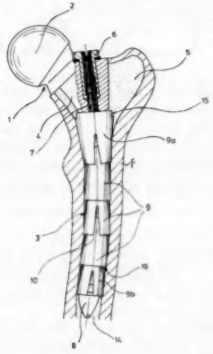
Continuation-in-part of Ser. No. 886,769, Dec. 19, 1969, abandoned. This application Sept. 1, 1971, Ser. No. 177,156
Int. Cl. D06m *15/58*
U.S. Cl. 2—243 R **12 Claims**

1. A method of improving the crease resistance of a textile material wherein a cellulosic containing fabric impregnated with an aqueous solution of a cellulose-reactive cross-linking agent is subjected to treatment with microwave energy at a frequency within the range of from approximately 800 megacycles per second to about 30 kilomegacycles per second to elevate the fabric temperature to the curing temperature and heat loss from the fabric surface occasioned by the evaporation of water therefrom during the microwave energy reaction promotion is compensated for by either interposing a water vapor pervious insulating material between the fabric surface and the ambient atmosphere or directly contacting the fabric surface with air at elevated temperatures prior to beginning said treatment with microwave energy.

3,846,846
HIP JOINT PROSTHESIS

Artur Fischer, Altheimer Str. 219, D-7241 Tumlingen, Germany

Filed Sept. 26, 1973, Ser. No. 401,103
Claims priority, application Germany, Sept. 28, 1972, 2247560
Int. Cl. A61f *1/00*
U.S. Cl. 3—1 **13 Claims**



1. A hip joint prosthesis, comprising first means, including a ball-shaped portion which is to form part of a hip joint, and a second portion which is to be inserted into a human femur and extends from said first portion; and second means for anchoring said second portion in the femur, comprising an elongated expander rod inserted through said second portion and insertable into the femur longitudinally thereof, a row of tubular expansion elements each surrounding said rod and being angularly displaceable with reference to the longitudinal axis of the same, and actuating means on said expander rod for effecting axial movement of said rod with reference to said row and for thereby causing expansion of said expansion elements into anchoring contact with the femur.

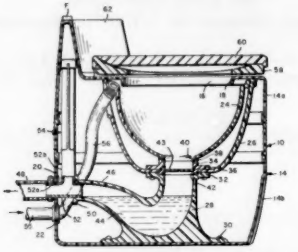
3,846,847
MARINE TOILET

Wesley H. Tufts, Holliston, and James H. Albertassi, Braintree, both of Mass., assignors to Nautron Corporation, Braintree, Mass.

Filed Dec. 7, 1972, Ser. No. 313,179
Int. Cl. E03d *5/012, 11/11*
U.S. Cl. 4—95 **12 Claims**

1. In a marine toilet, a bowl open at the top and bottom, a trap connected to the bottom opening, a decontamination tank, a combination pump, maserator and valve, a conductor interconnecting the trap and tank, intake and discharge conductors connected respectively to the intake and discharge sides of the pump so that clean water entering the intake conductor passes through the valve and is delivered to the bowl by the intake side of the pump and the mixture of clean water and effluent is withdrawn from the trap into the maserator and delivered into the decontamination tank by the discharge side of the pump, said valve comprising flat plates

containing parts aligned by shifting of one of the valve plates relative to the other to provide for the aforesaid introduction of clean water into the bowl and delivery of the mixture of clean water and effluent to the decontamination tank, said plates being arranged to have sliding engagement with each other and so that the edges of the ports have shearing engagement with each other and a solenoid operated plunger connected to the moveable one of the plates, said solenoid when energized being operable to slide the moveable one of the valve plates on the fixed one of the valve plates in a direction to initiate a flushing cycle and a flush button electrically connected to the solenoid operable to energize the solenoid.



3,846,848

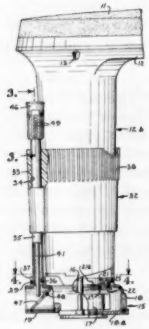
CONTROL ASSEMBLY FOR BATHTUB HYDROTHERAPY UNIT

Samuel L. McNair, Overland Park, Kans., assignor to Dazey Products Co., Kansas City, Mo.

Filed Aug. 22, 1973, Ser. No. 390,384

Int. Cl. A47k *3/00*; **A61h** *33/02*, *9/00*

U.S. Cl. 4—180 **3 Claims**



1. In an apparatus for circulating water in a tub, said apparatus including a centrifugal pump for immersion in the tub and a vertical casing extending thereabove for housing the pump drive shaft, the improvement comprising:

a centrifugal pump housing supported on the bottom end of said casing and rotatable relative thereto, said pump housing having an inlet and a lateral discharge outlet.

a valve member mounted interiorly of said outlet for controlling flow therethrough,

a sleeve circumscribing said casing above the pump housing and rotatable in relation to the casing, and

rigid connecting means connecting the sleeve to the pump housing to effect angular adjustment of said outlet in response to rotation of the sleeve, said rigid means including means for controlling the operation of said valve.

3,846,849

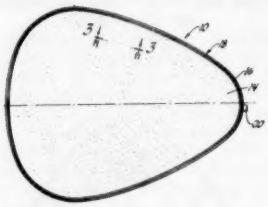
TWO-PIECE BEDPAN

Ronald M. Dooley, East Lansing, and John W. Haas, Ypsilanti, both of Mich., assignors to Tri-State Hospital Supply Corporation, Howell, Mich.

Filed Mar. 22, 1973, Ser. No. 343,994

Int. Cl. A61g *9/00*

U.S. Cl. 4—112 **5 Claims**



1. A bedpan comprising: a bowl member comprising a base, a sidewall extending upwardly from said base, and a plurality of lugs depending from the upper edge of said sidewall for preventing friction interlock between said bowl member and a similar second bowl member within which said bowl member is telescopically stacked; a seat member separable from said bowl member; and mating interlock portions respectively carried by said bowl member and said seat member comprising an extension lip carried by one of said bowl member and said seat member and a socket carried by the other of said bowl member and said seat member adapted to receive said extension lip, said extension lip including a yieldable continuous ridge, said extension lip and said socket including corresponding beveled surfaces, and said extension lip and said socket extending substantially around the perimeter of said bedpan.

3,846,850

SWIMMING POOL

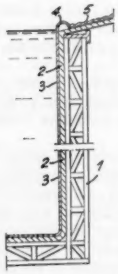
Natale Banchi, Via San Pio X 16, Genova, Italy

Filed Apr. 13, 1973, Ser. No. 350,776

Claims priority, application Italy, Apr. 13, 1972, 12602-/72; Mar. 16, 1973, 12520-/73

Int. Cl. E04h *3/16*, *3/18*

U.S. Cl. 4—172.19 **15 Claims**



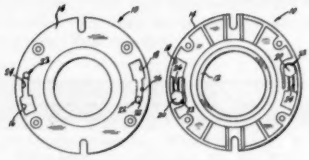
1. A swimming pool assembly comprising the following elements, a supporting structure including a frame, a plurality of sheet metal plates in spaced edge to edge relationship supported on said frame, lining panels including edge portions arranged to overlie said plurality of plates, means serving to join said panels together in a water-tight manner and compensate for movement in the structure as well as thermal expansion of said respective elements comprising the pool assembly.

3,846,851

PLUMBING FITTING

Kenneth V. Pepper, Davison, Mich., assignor to Genova Products, Davison, Mich.

Filed Oct. 10, 1972, Ser. No. 295,802
Int. Cl. E03d 11/13; F16l 5/00, 15/00
U.S. Cl. 4—252 R 8 Claims



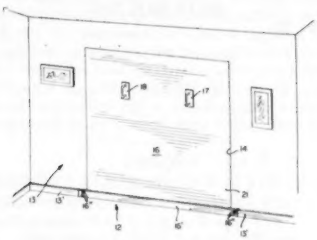
1. A closet flange on which a water closet is adapted to be mounted, said flange having bolt slots in which bolts are inserted in inverted positions for securing said closet in place, each of said slots being wider at one end for initial insertion of a bolt and having a width at the other end substantially the same as that of the diameter of the bolt, the slot having an inwardly directed feathered edge at said other end of a dimension to require the bolt to be pressed therein so that a fit for the bolt is provided at said feathered edge sufficient to sustain the bolt in place.

3,846,852

WALL PANEL DISAPPEARING BED

George J. Mercier, 71 Central Ave., Rochelle Park, N.J. 07662

Filed Aug. 29, 1973, Ser. No. 392,433
Int. Cl. A47c 17/40
U.S. Cl. 5—10 R 5 Claims



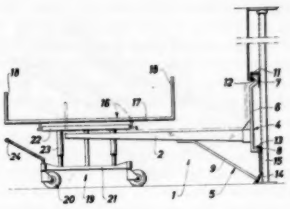
1. A wall panel disappearing bed comprising floor brackets adapted to be fitted lengthwise into a wall opening and respectively fixed to the floor at the respective opposite sides thereof, each of said brackets having a top forwardly extending runner adapted to overlie the floor and provide free space thereunder, a disappearing bed structure pivotally connected between the forward ends of the top runners and having a wall panel adapted to be flush in the wall opening when lifted thereinto, lifting spring means connected to the floor brackets and the bed structure to assist the lifting thereof, said wall opening extended down to the floor, a removable transverse floor molding piece adapted to extend between the sides of the wall opening and over the floor, said wall panel of the bed structure having a lower edge means that rides under the top forwardly extending runners and into the free space thereunder as the bed structure is lowered to the floor and when the bed structure is lifted the lower edge means of the bed wall panel will engage with the rear face of the removable transverse floor molding piece, whereby the bed wall panel and the floor molding piece will fully close the wall opening at the floor thereof.

3,846,853

BED PLANT FOR HOSPITALS

Oake L. F. Jacobsson, 41253 Goteborg, Sweden

Filed Feb. 7, 1972, Ser. No. 223,875
Claims priority, application Sweden, Feb. 8, 1971, 1525/71
Int. Cl. A47c 17/04
U.S. Cl. 5—60 1 Claim



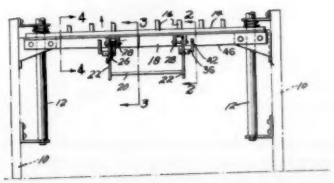
1. Bed-plant for hospitals, comprising a plurality of suspension means each comprising one upper rail having longitudinally extending grooves and one lower rail which can be fastened in horizontal position to the walls of the hospital selected for installation of bedsteads, a plurality of brackets elements dismountably supported by said suspension rails in any desired longitudinal position of the latter, said brackets being provided with supporting arms and upper hooking means provided to cooperate with edges of said longitudinally extending grooves provided on said upper rail, and lower supporting means arranged to support against said lower rail, a number of bed elements each one substantially comprising a bed-plane with bedstead ends, and being detachably supported by the supporting arms of said brackets elements, a plurality of carriages provided with lifting means, arranged for the transportation of said bed elements and for lifting up the same from, or respectively lowering them onto, said bracket elements, and a plurality, of carriages provided in said plant serving the purpose to transport separate, empty bedstead elements, and each one of said carriags having supporting means arranged to cooperate in supporting a plurality of upwards tilted ones of said bed elements.

3,846,854

SAFETY TRIP LOCK FOR CRIBS

Robert G. Bryant, Gardner, Mass., assignor to Gem Industries, Inc., Gardner, Mass.

Filed Oct. 9, 1973, Ser. No. 404,440
Int. Cl. A47c 21/00
U.S. Cl. 5—100 4 Claims



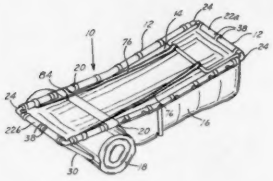
1. The combination of a crib having a drop side and a pivotal latch normally maintaining the drop side latched in its upper position, and means on the drop side engaging said pivotal latch and maintaining it against pivotal motion to unlatch the drop side, said means being constructed and arranged to disengage the latch upon motion of the drop side in an upward direction.

3,846,855

CONVERTIBLE BACKPACK AND COT APPARATUS

Charles J. Peterson, 332 S. Can St., Lakewood, Colo. 80226

Filed Feb. 20, 1973, Ser. No. 333,468
Int. Cl. A45f 1/00; E04b 1/347
U.S. Cl. 5—114 10 Claims



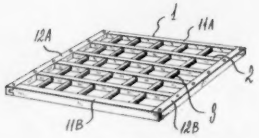
1. A convertible packpack and cot apparatus comprising:
a substantially rectangularly shaped frame having a pair of end members, a pair of side members, and first and second pairs of elbow members forming the corners of said frame, each of said elbow members being telescopically connected to one of said end members and one of said side members to define an adjustable extension of the associated end member and side member, at least one of the end frame members being rotatable relative to the associated elbow members telescopically connected therewith, and releasable lock means operably interconnecting said end frame member and the associated elbow members for securing the said end frame member relative to the associated elbow members in a selected angularly related position,
leg members connected to said end members and rotatable relative to said elbow members along with the end members so that said leg members can be positioned to elevate said frame from a supporting surface, and
a cot sheet attached to said frame along the periphery of the frame.

3,846,856

SOFT MAT

Hsiu-Ying Tu, No. 182, Shih Feng Rd., Chiao Tou Hsiang, China /Taiwan

Filed May 22, 1973, Ser. No. 362,816
Int. Cl. A47g 9/00
U.S. Cl. 5—344 3 Claims



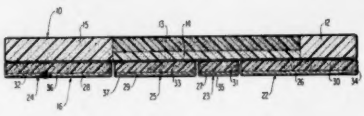
1. A flexible mat comprising an outer peripheral frame, a plurality of parallel longitudinal bar members, a series of short transverse opposed rod members extending from each side of said bar members at spaced intervals therealong and siad opposed rod members being aligned between adjacent bar members, tubular members disposed on said opposed rod members and extending between said adjacent bar members, flange members disposed at the ends of said bar members, said flange members being secured within grooves in said frame by fastening means.

3,846,857

MULTI-SECTION VARIABLE DENSITY MATTRESS

Clifford Weinstock, Pompano Beach, Fla., assignor to Neurological Research and Development Group Incorporated, Scranton, Pa.

Continuation-in-part of Ser. No. 233,687, March 10, 1972, abandoned. This application Mar. 28, 1973, Ser. No. 345,605
Int. Cl. A47c 27/08, 27/22
U.S. Cl. 5—345 R 5 Claims



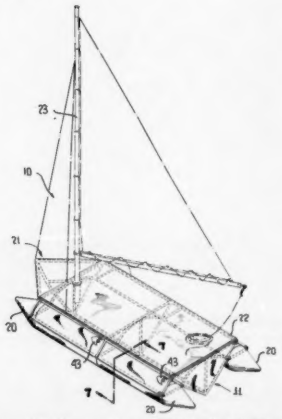
1. A mattress made of foam having three distinct sections, said distinct sections being integral and coextensive with each other, said foam material of the first zone having a first density and compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot, said second zone being adjacent to said first zone and having a second density and second compressibility factor, said second zone having a first and second portion, said first portion having a compressibility factor at 4 inches in the order of 37 to 60 lbs. per cubic foot, and said third zone adjacent to said second zone and having a third density and compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot, and said second portion of said second zone having a compressibility factor at 4 inches in the order of 22 to 30 lbs. per cubic foot.

3,846,858

ASSEMBLY FOR USE IN RECREATIONAL ACTIVITIES

Harold A. Syfritt, 1025 Somera Rd., Los Angeles, Calif. 90024

Filed Feb. 18, 1972, Ser. No. 229,096
Int. Cl. B63b 7/00
U.S. Cl. 9—25 12 Claims



1. An assembly for use in recreational activities comprising:
a. at least two elongated units mounted on a rigid support means,
b. said units being parallel and laterally displaced with respect to each other,
c. at least one of the units being detachably connected to the rigid support means,
d. each said unit including a collapsible, elongated container adapted to receive a fluid medium therein and an elongated frame structure having a plurality of parallel linear support members wherein each support member is

laterally spaced with respect to any other lateral support member and a separate end frame portion connected at each end of said support members to form an open structural configuration to receive the collapsible container,

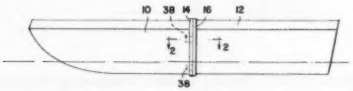
e. said detachably connected unit having a collapsible, elongated container adapted to hold either a liquid fluid medium or a gas fluid medium whereby the detachably connected unit may be used as a pontoon when the container is inflated with a gas fluid medium and is employable in other uses when the container is not inflated or holds a liquid fluid medium.

3,846,859

BOATING APPARATUS

Warren J. Vertrees, Anchorage, Alaska, assignor to The Raymond Lee Organization, Inc., New York, N.Y.

Filed Sept. 28, 1973, Ser. No. 401,827
Int. Cl. B63b *7/04*
U.S. Cl. 9—2 S **2 Claims**



1. Boating apparatus comprising:

a boat having separate front and rear mating halves;

first and second detachable mating half rib sections, each section being secured to an edge of a corresponding boat half which is adapted to abut an edge of the other boat half, the sections extending vertically along the sides and horizonally along the bottom of the boat halves and having mating tongues and grooves; and

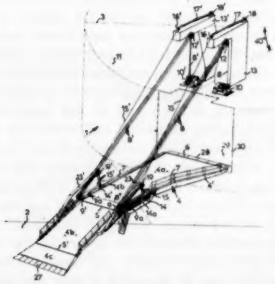
locking means being disposed in the sections in a plurality of spaced positions, the sections having aligned transverse slots at said spaced positions, the locking means being disposed partially in one section and partially in the other to enable the sections to be locked together in sealing engagement to assemble the boat and enable the sections to be separated and the boat disassembled, the means including a stationary member disposed in each of the slots of one section and a corresponding movable member disposed in each of the slots of the other section.

3,846,860

MOVABLE ACCESS RAMP FOR VEHICLES

Henri Kummerman, Geneva, Switzerland, assignor to MacGregor-Comarain S.A., D'Avray, France

Filed June 21, 1973, Ser. No. 372,051
Claims priority, application France, June 28, 1972, 72.23373; May 29, 1973, 73.19511
Int. Cl. B65g *11/00*
U.S. Cl. 14—71 **30 Claims**



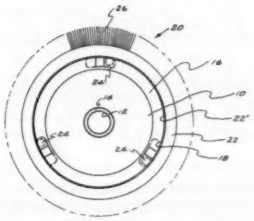
1. A movable device forming a foldable access ramp to interconnect a vehicle with an outside platform, said ramp being adapted to swing in parallel relation to a vertical plane so as to be raised into inoperative stowed position on said vehicle and lowered into operative working position to rest at least partially on said platform, said ramp comprising at least two successive ramp sections pivotally interconnected endwise in the longitudinal direction and the first one of which forming an innermost section is pivotally connected to said vehicle and attached with at least one point of said ramp section to at least one constantly tensioned handling cable winding up on at least one winch located on said vehicle whereas the other or second ramp section may be folded back and downwards against and along said innermost ramp section and is attached to at least one handling cable controlling its outward extension for raising said other ramp section into the extended position in at least approximatively aligned registering relationship with said innermost ramp section in the lowered working position, wherein the improvement consists in that each handling cable for controlling the outward extension of said second ramp section is connected to means for automatically tensioning and taking up the slack of said cable through the action of potential energy, said means being provided on said vehicle and comprising self-acting means for stopping said cable and holding it unidirectionally against motion, said latter means being adapted to form a stationary fastening means for generating, through blocking of the effective useful length of said cable, a tractive reaction force tending to raise said second ramp section into its outward extended position during the lowering motion through gravity of said innermost ramp section which is constantly suspended from each one of its own handling cables.

3,846,861

BRUSH UNIT AND REPLACEMENT BRUSH THEREFOR

James S. Smith, Sr., 2443 Armstrong Cir., Gastonia, N.C. 28052

Filed Jan. 23, 1973, Ser. No. 326,021
Int. Cl. A46b *1/00, 13/02*
U.S. Cl. 15—179 **13 Claims**



1. A brush unit comprising a hub, said hub having a mounting opening therethrough, and a brush removably secureable around said hub, said brush having a body with an inside periphery substantially conforming in shape to an outside periphery of said hub, one of said hub and said brush having a plurality of elongated slots extending circumferentially therearound and having a side opening intermediate the length thereof and the other of said hub and said brush having a plurality of projections thereon, said projections being passable through said intermediate openings into said slots and drivingly connecting said brush and said hub away from said openings.

3,846,862

SHEATH FOR A CURLING BROOM

Albert L. Botting, 616 12th St., Hanover, Ontario, Canada

Filed Mar. 19, 1973, Ser. No. 342,355
Int. Cl. A46b 17/04; A63b 67/14
U.S. Cl. 15—210 R 2 Claims

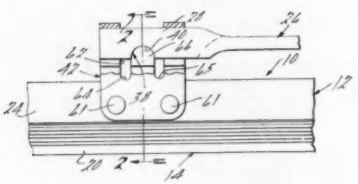
1. A sheath for a curling broom having a handle and a cornstalk brush and comprising: a single length of multiple ply material of uniform width to its side edges and terminating at its ends in portions of narrower width, said uniform width portion being folded transversely on a line midway between its ends; means fastening the edges of said material inwardly to form a sheath having a closed end at said fold line, said narrower end portions being inturned and fastened to define corresponding openings therein, said multiple ply material being in the form of a laminate of an external sheet of coarse surfaced synthetic fibre separated from an inner liner of synthetic fibre material by an elastomer foam sheet, fastening means connectable through the openings of said end portions for fastening the sheath to the curling broom, and a packaging sleeve adapted for packaging same and for retaining the cornstalks of a broom in alignment during insertion of the cornstalks into the sheath.

3,846,863

WINDSHIELD WIPER ASSEMBLY

Johan H. van den Berg, and Alex H. A. van Eekelen, both of Hasselt, Belgium, assignors to Monroe Belgium N.V., Sint-Truiden, Belgium

Filed Nov. 10, 1972, Ser. No. 305,500
Int. Cl. B60s 1/40
U.S. Cl. 15—250.32 6 Claims



1. A windshield wiper blade connector adapted to detachably secure a windshield wiper blade assembly to an associated wiper arm having a generally flat rectangular cross-section end portion defining a detachment area along one side thereof,

said connector being of a generally inverted U-shape configuration and including an end section and a pair of spaced side sections adapted to be secured to the blade assembly, said connector section defining a cavity adapted to removably receive the end portion of the wiper arm,

said side sections of said connector include upwardly extending and inwardly projecting spring lips, the uppermost portions of which are spaced downwardly from said top section of said connector a predetermined distance, and wherein said attachment area of said arm includes a recessed portion formed in the underside thereof, the uppermost portion of said recessed area being spaced from the opposite side of said wiper arm end portion a distance approximately equal to said predetermined distance, whereby upon insertion of said wiper arm end portion into said cavity, said end portion is confined between the uppermost portions of said spring lips and the underside of said top section of said connector.

3,846,864

WINDSCREEN WIPER FRAME

Jacques Baut, 213 boulevard du Souverain, 1160 Brussels, Belgium, and Paul Journee, Chateau de Reilly, 60 Reilly, France

Filed Jan. 24, 1973, Ser. No. 326,456
Claims priority, application France, July 7, 1972, 72.24790
Int. Cl. B60s 1/04
U.S. Cl. 15—250.42 4 Claims

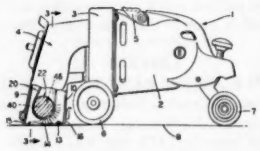
1. Windscreen wiper having a frame comprising the combination of, at least: a main bridge; a swingle bar articulated at one end of the bridge and bearing at both its extremities on the elastic wiper blade; a secondary bridge articulated at the other end of said main bridge, the outer extremity of said secondary bridge bearing on the wiper blade, and articulated at the inner extremity of said secondary bridge, an intercalary swingle bar, both extremities of which bearing on said wiper blade.

3,846,865

ATTACHMENT CLIP FOR SUCTION CLEANER BRUSH

William G. Holman, Stoughton, Wis., assignor to Royal Appliance Mfg. Co., Highland Heights, Ohio

Filed July 13, 1973, Ser. No. 379,052
Int. Cl. A47l 5/26, 5/34
U.S. Cl. 15—392 4 Claims

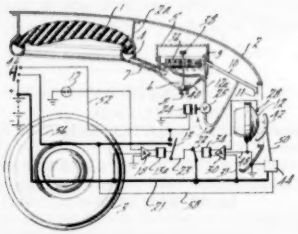


1. In a suction cleaner of the type having a nozzle, a brush mounted within the nozzle, an axle pin in each end of the brush, a block ecentrically journalled on each end of the pin rotatably mounting the brush within the nozzle, a squared stationary end member mounted on each block, and inverted U-shaped brackets having spaced fingers in the nozzle detachably mounting the squared end members between the fingers, the improvement comprising; clip means mounted on the squared end member at each end of the brush; each clip means having a vertically extending wall with inner and outer surfaces, and flanges extending outwardly from three sides of the clip means outer surface forming an open clip top end; a squared opening formed in the vertical wall between said flanges through which the squared brush end member extends mounting said clip means on the brush end; and the nozzle brackets being inserted through the open clip top ends with the bracket fingers located within the flanges whereby the brush end members can be mounted in only one position on the brackets when the brush is mounted within the nozzle, and whereby the eccentricity of the axle pins are the same at both brush ends.

3,846,866
ERASER FOR BALL POINT PEN
George E. Burnett, 1020 Josephine St., Marinette, Wis. 54143
Filed May 1, 1973, Ser. No. 356,153
Int. Cl. B43k 29/02
U.S. Cl. 15—425 3 Claims

1. In an eraser attachment for ball point pens of the type that include a pocket clip and a hand actuated plunger, a generally cylindrical body adapted to encompass the ball point pen, a generally cylindrical eraser socket integrally secured to said body and projecting outwardly therefrom with its axis perpendicular to the axis of said body, means on said body cooperating with said pocket clip for preventing rotation of said body on said ball point pen during use of said eraser attachment, a generally resilient eraser seated in said socket, the means for preventing rotation of said body including a generally rectangular notch formed in the upper edge of said body for engaging around the base of said pocket clip to prevent the body from rotating around the pen as the eraser attachment is used and from moving longitudinally of the pen in one direction, said body being resilient and having a longitudinal split parallel to the axis of the body to permit said body to resiliently grasp the ball point pen, the upper edge of said split communicating with said notch, said socket being positioned generally in diametrically opposed relation relative to said notch and split.

3,846,867
ROAD WATER COLLECTION AND SURFACE CLEANING APPARATUS
John J. Bryant, 359 Hawthorn, Glen Ellyn, Ill. 60137
Filed June 19, 1972, Ser. No. 264,365
Int. Cl. A47l 1/46
U.S. Cl. 15—250.02 33 Claims

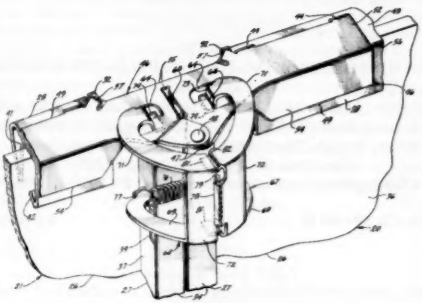


1. A mechanism for wetting selected surfaces of a vehicle having wheels with water collected from the surface on which the vehicle is travelling, the mechanism comprising means for lifting the water from the surface to a position spaced from the surface including at least one wheel of the vehicle, the water to be lifted collecting on the exterior of the wheel as it leaves the surface on which it is travelling and being carried upwardly thereafter, means mounted on the vehicle and positioned adjacent said one wheel for collecting the lifted water, the water being directed to said collecting means by a flinging action, and means in fluid communication with said collecting means for directing the collected water to the vehicle surface to be wetted.

ERRATUM

For Class 16,148 see:
Patent No. 3,846,871

3,846,868
HINGE FOR DOOR WITH HOLLOW STILE
Robert Brydolf, Pasadena, Calif., assignor to Acme General Corporation, Monrovia, Calif.
Filed Sept. 19, 1972, Ser. No. 290,320
Int. Cl. E05f 1/12
U.S. Cl. 16—181 7 Claims



1. A spring hinge for a pair of bifold doors each having a door panel, a stile along each of the side edges of the panel, and a rail along each end of the panel comprising:
first and second hinge leaves, each hinge leaf comprising a leg for engaging a stile and an arm for fitting over the top of a rail and engaging therewith for connecting the rail and stile together;
a hinge pivot interconnecting the hinge leaves for pivoting between an open position with rails in alignment and a closed position with rails approximately side by side; and spring means engaging the hinge leaves for biasing the leaves towards each other, the hinge pivot axis being on one side of a line between the loci of engagement of the spring means with the hinge leaves when in the closed position and not on the same side when in the open position.

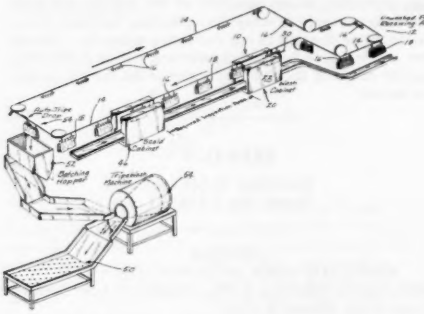
3,846,869
METHOD OF WASHING TRIPE
Wilford A. Barbee, Homer, Nebr., assignor to Iowa Beef Processors, Dakota City, Nebr.
Filed Jan. 15, 1973, Ser. No. 323,881
Int. Cl. A22c 17/16
U.S. Cl. 17—43 8 Claims

1. A method of washing tripe and separating the knap therefrom, said tripe having a knap side and an opposite side, said

method comprising, opening the tripe and removing the contents therefrom,

folding said tripe to allow subsequent exposure of the entire knap side of said tripe to scalding and to prevent subsequent exposure of the opposite side of said tripe to scalding,

water washing both the knap side and the opposite side of said tripe, and scalding only the knap side of said tripe to cook the knap loose from said tripe.



3,846,870

DEVICE FOR STRIPPING FIBER TUFTS IN THE PICKING PROCESS

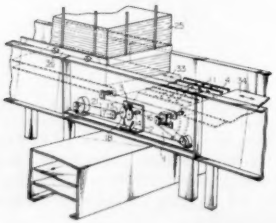
Hidejiro Araki, Aichi-ken; Takashi Katoh, Kariya, and Susumu Otani, Ohbu, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi-ken, Japan

Filed June 25, 1973, Ser. No. 373,515

Claims priority, application Japan, June 27, 1972, 47-64819

Int. Cl. D01g *7/06*

U.S. Cl. 19—80 R **6 Claims**



1. Device for stripping fiber tufts from a mass of fibers in the picking process, comprising an assembly of plural stripping members turnably assembled about a common shaft, a plurality of separation plates each disposed between two adjacent stripping members, a first means for turning half of said stripping members in a clockwise direction about said common shaft, a second means for turning the other half of said stripping members in a counterclockwise direction about said common shaft, each of said stripping members provided with a plurality of saw teeth or pins secured on the working surface thereof, means for supplying said fiber mass to a working position of said assembly of said stripping members, said supplying means disposed in proximity to and above said assembly, means for delivering stripping fibers to a succeeding machine and said delivery means disposed below said stripping members, whereby each combination of said stripping members turning opposite directions to each other impart stripping actions in opposite directions to said mass of fibers at said working position thereof.

3,846,871

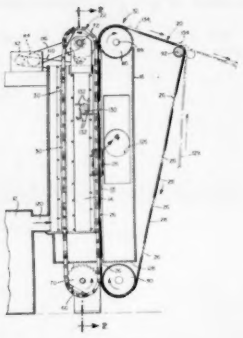
APPARATUS FOR FORMING FIBROUS PADS

Charles G. Kolbach, Media, Pa., assignor to Scott Paper Company, Delaware County, Pa.

Continuation-in-part of Ser. No. 67,862, Aug. 28, 1970, abandoned. This application Mar. 24, 1972, Ser. No. 237,963

Int. Cl. D01g *25/00*

U.S. Cl. 19—148 **21 Claims**



1. An apparatus for forming discrete fibrous pads, said apparatus comprising:

A. a pad-formation assembly having spaced, three-dimensional pad-receiving compartments, said compartments being separated from each other by air-impermeable regions; each pad-receiving compartment having a configuration of a fibrous pad to be formed therein and being defined by a bottom air-permeable surface and sidewall means extending outwardly from one side of said bottom surface; sections of said sidewall means being movable relative to each other and to said bottom surface to aid in releasing a formed pad from each of said pad-receiving compartments; said pad-formation assembly including;

1. a flexible substrate adhered to a conveyor means;
2. said conveyor means providing said bottom air-impermeable surfaces, and said flexible substrate including surfaces disposed contiguous to the periphery of said air-permeable surfaces for providing said sidewall means;

B. drive means for moving said pad-formation assembly along a predetermined path including a pad-formation run directed through a pad-forming region;

C. means for forming a gaseous suspension of fibers in said pad-forming region; and

D. vacuum means for pulling the gas of said suspension through the bottom air-permeable surfaces of said pad-receiving compartments from said one side of said air-permeable surfaces to said in depositing the fibers of said suspension on said bottom air-permeable surfaces as said air-permeable surfaces pass through said pad-forming region.

3,846,872

SPECTACLE CASE

Emanuel Nathan, South Orange, N.J., assignor to Opticase, Inc., Rockaway, N.J.

Division of Ser. No. 201,329, Nov. 23, 1971, Pat. No. 3,749,231. This application Mar. 26, 1973, Ser. No. 344,992

Int. Cl. B43k *25/00*

U.S. Cl. 24—3 G **1 Claim**

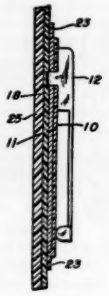
1.

An assemblage comprising,

a - a patch of flexible material having a generally rectangular configuration,

b - a rigid backing member disposed on one side of said patch, said backing member having edges spaced inwardly from and proximate to the edges of said patch, and

c - a pocket clip disposed on the other side of said patch, said clip having integral prongs passing through the patch



and backing member with the end portions of said prongs being offset into engagement with a surface of the backing member; the recited assemblage being attachable to a relatively flat surface by means of the marginal edge portions of the patch which extend beyond the edges of the backing member.

3,846,873

FACE PIN FOR ARCHERY TARGETS

Charles A. Saunders, Columbus, Nebr., assignor to Saunders Archery Co., Columbus, Nebr.

Filed July 5, 1973, Ser. No. 371,821

Int. Cl. A44b 9/00; A63b 71/00

U.S. Cl. 24—153 R **8 Claims**

7. A face pin for selectively securing a target sheet to and releasing a target sheet from a target mat of the type having a mass of oriented fibers, the fibers defining a series of spaced zones therebetween adapted to receive a probe therewithin for interlocking engagement with said fibers; said face pin comprising

a mat-pentrating shaft defining a principal axis of said pin, and

rib means extending outwardly of a principal surface of said shaft and radially of said principal axis, said rib means comprising a plurality of discrete projections spaced annularly for one another and extending around less than the entire perimeter of said shaft;

whereby said pin means interlocks with said fibers of said mat when said rib means projects toward said fibers and whereby said pin means is selectively readily removable from said mat when said rib means projects into said zones and substantially out of contact with said fibers.

3,846,874

BUCKLE ASSEMBLY

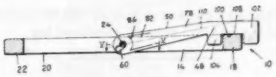
Helmut Johann Swierkot, 26 Seabrook Ave., Toronto, Ontario, Canada

Filed Mar. 9, 1973, Ser. No. 339,722

Claims priority, application Canada, Apr. 28, 1972, 140898

Int. Cl. A44b 11/20

U.S. Cl. 24—188 **5 Claims**



1. A buckle assembly comprising a frame and a hinge pin, the frame including a pivotal cross-member and a parallel support cross-member, the pivotal cross-member having a cylindrical shaft portion, the hinge pin being elongated and formed of a suitably resilient plastic and having a first end portion, a main body portion and a second end portion, the first end portion having an outer surface, a central cylindrical transverse opening adapted to pivotally receive the shaft portion, and a passage with first and second opposed sides extending from the outer surface to the central opening, the first side being flat, the second side having a first flat portion extending from the outer surface of the first end portion parallel to the first side, and a second flat portion converging towards the first side as it extends from the first flat portion to the central opening to form a retaining ridge adjacent the central opening, the passage adapted to permit resilient insertion of the shaft portion of the pivotal cross-member through the passage into retained pivotal receipt in the central opening, the support cross-member of the frame being rigidly located relative to the pivotal cross-member and adapted to support the second end portion of the hinge pin when the shaft is in pivotal receipt in the central opening and the buckle assembly is in use.

3,846,875

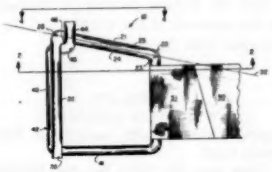
BUCKLE-STRAP BELT

Peter V. Catlos, and Gert Somann, both of Huron Park, Ontario, Canada, assignors to Ferplas Industries Limited, Ontario, Canada

Filed Dec. 20, 1973, Ser. No. 426,743

Int. Cl. A44b 11/04

U.S. Cl. 24—200 **4 Claims**



1. As an article of manufacture, a buckle comprising a single piece of wire formed as follows:

a. a first generzally U-shaped portion including a distal leg, a bight and a first proximal leg, a bend connecting one end of said distal leg to said bight, the distal leg opposite said bight terminating in a free end, said first proximal leg being adapted to be engaged by a strap;

b. an essentially L-shaped member having one arm integrally joined by a bend to an end of said first proximal leg opposite said bight, said L-shaped member further comprising a second proximal leg joined by a bend to said first arm, said second proximal leg being in adjacent, parallel

relationship to said distal leg, said second proximal leg at the end thereof opposite its connection with said first arm having a dog-legged portion generally parallel to and offset from said second proximal leg and integrally connected thereto by a bend and thereby forming a notch, said doglegged portion extending substantially across said bight to constrain said distal leg in said adjacent parallel relationship to said second proximal leg, said doglegged portion terminating in a free end, said bend between said distal leg and said bight being lockingly engaged by said notch;

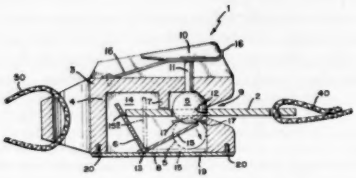
c. whereby the end portion of a strap can be locked between the distal leg and the second proximal leg.

3,846,876

BUCKLE WITH LATCH

Per Olag Weman, Haslah, Germany, assignor to Sigmatex, A.G., Basel, Switzerland

Filed Oct. 1, 1973, Ser. No. 402,499
Int. Cl. A44b *11/26*
U.S. Cl. 24—230 A **5 Claims**



1. Seat belt buckle with apertured tongue received therein for locking said tongue in said buckle, said buckle comprising a housing having a base, the housing forming a chamber, the tongue extending into the housing chamber to be locked therein, freely moveable locking element within said housing chamber for reception in the aperture of the tongue to lock said tongue in said housing chamber, pivotable latch means mounted on the base within said housing chamber, said locking element resting on said latch means, said locking element in contact with said tongue when said tongue is inserted in said housing, said latch means pivoting and moving said locking element into engagement with the aperture of the tongue when the tongue is inserted in position in the housing chamber, and release means associated with said housing for depressing the locking element against the force of the latch means so that the locking element is disengaged from its position in the aperture in the tongue and the latch means ejects the tongue from the chamber.

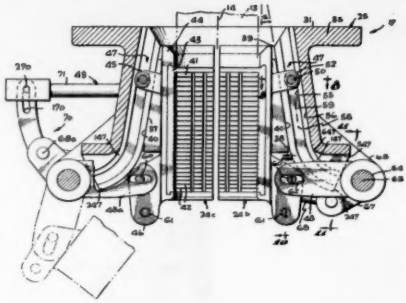
3,846,877

WELL SLIP ASSEMBLY

Willy H. Spiri, Whittier, Calif., assignor to The Cavins Co., Long Beach, Calif.

Filed Aug. 20, 1973, Ser. No. 390,002
Int. Cl. E21b *19/06*
U.S. Cl. 24—263 CA **13 Claims**

1. A slip assembly for gripping a tubular well string, extending along an axis, comprising a slip bowl structure, a plurality of slip structures engaging said bowl structure in a camming relation acting to cam the slip structures radially inwardly upon axial movement thereof, a first connection attaching one of said slip structures to said bowl structure movably at a first location for generally axial relative movement between an active string gripping position and a retracted position, and a second connection attaching the same slip structure to said bowl structure movably at a second location spaced generally axially from said first location and in a relation positively controlling its orientation during shifting movement by the movable attachment of the slip structure to the bowl at said two spaced locations, said second connection including means forming a generally axially extending guideway in said slip bowl structure which converges progressively toward said axis



as it advances axially, and interfitting means carried by said one slip structure and projecting into and movable along said guideway, said guideway having a first portion extending at essentially a uniform angle to said axis, and having an end portion curving progressively away from the axis.

ERRATA

For Classes 26—458 and 26—589 see:
Patents Nos. 3,846,902 and 3,846,905

ERRATUM

For Class 28—72 see:
Patent No. 3,846,881

3,846,878

METHOD OF MAKING AN UNDERWATER PROJECTILE

Franklin A. Monson, Glen Arm, and Kenneth E. Mueller, Baltimore, both of Md., assignors to AAI Corporation, Corkeysville, Md.

Division of Ser. No. 734,291, June 4, 1968. This application Dec. 24, 1970, Ser. No. 101,431
Int. Cl. B21k *21/06*
U.S. Cl. 29—1.2 **1 Claim**

1. The method of making an underwater projectile comprising:

forming a cylindrical shaft having opposite flat ends,

taper-grinding at one end of said shaft to a degree sufficient to leave a flat blunt end whereby said one end is frustoconical and flat-ended,

impact die forming the opposite end of said cylindrical shaft by impact in a forming die and thereby working the cylindrical shaft material into a convex finned shape with the fins extending radially beyond the shaft diameter with the connecting shaft body being rearwardly inwardly tapered from the beginning to the ends of the fins,

surface grinding the radial surfaces of the fins to a first substantially constant radius at all longitudinal points along a rearward section of said fins,

and surface grinding the radial surfaces of the fins to a second smaller radius substantially constant along a forward section of said fins while grinding a forwardly facing shoulder on each of said fins and adjoining said rearward and forward different constant radii sections.

3,846,879

METHOD OF CONSTRUCTING A MULTI-PLATE ELECTRODE STRUCTURE

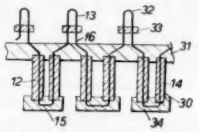
Jonathan Moubray Jenkins, Sevenoaks, England, assignor to Unigate Limited, London, England

Filed Mar. 8, 1973, Ser. No. 339,453

Claims priority, application Great Britain, Mar. 9, 1972, 11099/72

Int. Cl. B23p 17/04

U.S. Cl. 29—2 **13 Claims**



1. A method of making an electrode structure for use in an electric cell, said method comprising feeding a deformable substrate carrier to a coating apparatus, feeding to said coating apparatus an electrode material incorporating a porous material, applying said material in said coating apparatus as a spread onto at least one side of said carrier in spaced areas to form coated areas on said carrier separated by coating free areas of said carrier, causing said coating to become attached to said carrier, deforming said coated carrier to form coated areas in substantially opposing relationship inter-connected by coating free carrier areas, and securing at least some of said coating free areas in support means, to form a multi-plate electrode structure.

3,846,880

TOOL SUPPORT FOR USE IN MACHINE TOOLS PARTICULARLY IN TURNING MACHINES

Gerhard Foll, and Heinrich Lahm, Esslingen-Sirnau, Germany, assignors to Index-Werke KG Hahn & Tessky, Esslingen/Neckar, Germany

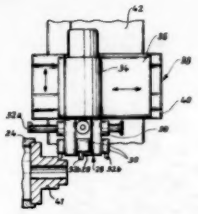
Division of Ser. No. 79,483, Oct. 9, 1970, Pat. No. 3,786,539. This application Oct. 31, 1973, Ser. No. 411,381

Claims priority, application Germany, Oct. 16, 1969, 1952050

Int. Cl. B23b 7/04

U.S. Cl. 29—36 **8 Claims**

1. In a machine tool, a combination comprising a frame; a work spindle for carrying a workpiece to be machined, said work spindle being mounted on said frame rotatable about a first axis; a slide including a first carriage reciprocably mounted on said frame and a second carriage mounted on said first carriage, one of said carriages being reciprocably substantially axially and the other substantially radially of said work spindle; and tool support means mounted on said second carriage and comprising a turret indexible with respect to the second carriage only about a second axis located in a plane including said first axis, said turret being provided with at least



two rows of receiving means for tool holders, said rows being arranged about said second axis coaxial therewith, said coaxial rows of receiving means being spaced from each other in the direction of movement of one of said carriages.

3,846,881

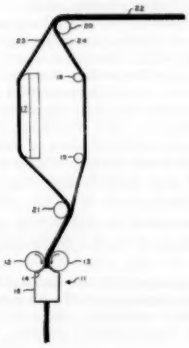
FILAMENT CRIMPING

Wayne K. Erickson, Greenville, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jan. 5, 1972, Ser. No. 215,461

Int. Cl. D02g 1/12

U.S. Cl. 28—72.14 **4 Claims**



1. A method of producing a crimped filament structure comprising

passing a first portion of said filament structure into a stuffer crimper at a first temperature;

simultaneously passing a second portion of said filament structure into said stuffer crimper at a second temperature substantially higher than said first temperature; and simultaneously subjecting said first portion and said second portion to crimping conditions in said stuffer crimper thereby producing a filament structure having crimp variations between individual filaments thereof.

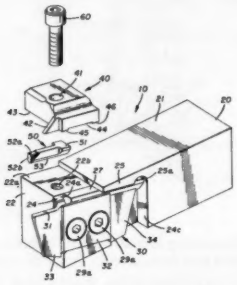
3,846,882
CUTOFF INSERT APPARATUS

William B. Stein, Barberton, Ohio, assignor to The Warner & Swasey Company, Cleveland, Ohio

Division of Ser. No. 310,353, Nov. 29, 1972, Pat. No. 3,805,350. This application Sept. 24, 1973, Ser. No. 400,156

Int. Cl. B26d *1/00*

U.S. Cl. 29—96 **3 Claims**



1. A cutoff tool comprising,

A. an elongate tool holder having

1. a base portion and
2. a coextensive forward portion having a pocket formed therein;

B. a support blade

1. releasably secured in said pocket and
2. having a V-shaped support groove in its upper surface and
3. having a central portion and an end portion, with said central portion being approximately double the thickness of said end portion;

C. a cutting insert having

1. a base portion with
   a. a length and width dimension and
   b. a V-shaped bottom surface and
2. a cutting portion projecting coextensively from said base portion of said insert and having
   a. a length and width dimension and
   b. a V-shaped bottom surface that is coplanar with the bottom surface of said base portion of said insert;

D. the width dimension of said cutting portion being substantially less than the width dimension of said base portion whereby said cutting portion of said insert can be supported on said end portion of said blade while said base portion of said insert is supported on said central portion of said blade;

E. the length dimension of said cutting portion being a substantial multiple of the length dimension of said base portion;

F. said insert being releasably and adjustably receivable on the V-shaped support groove of said support blade; and

G. a clamp member releasably receivable on said forward portion of said tool holder in overlying relationship to said insert

1. whereby said insert may be held on said support blade.

3,846,883
ROLLER FOR A PRESSURE TREATMENT OF WEBS

Mario Biondetti, Schio, Italy, assignor to Escher Wyss Aktiengesellschaft, Zurich, Switzerland

Filed Sept. 17, 1973, Ser. No. 397,926

Claims priority, application Germany, Sept. 16, 1972, 2245597

Int. Cl. B21b *13/02*

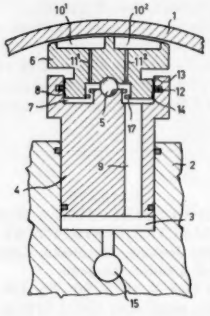
U.S. Cl. 29—116 AD **9 Claims**

1. A roller for pressure treatment of webs comprising

a hollow cylincrical rotatable shell;

a non-rotatable yoke extending through said shell and having means at each end for supporting said yoke in a support; and

means for transmitting pressure between said yoke and said shell, said means including cylinders in said yoke, a pressure piston slidably mounted in each cylinder, a joint on each piston, a bearing shoe mounted on each joint for



bearing against said shell, each said bearing shoe and piston defining a relief pressure chamber therebetween to receive a pressure medium for partially relieveing said joint, and an annular seal between each said bearing shoe and said piston disposed in a plane extending through a pivot point of said joint, at least one of said piston and said bearing shoe having a spherical surface in sealing engagement with said seal.

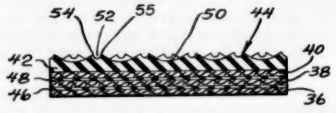
3,846,884
FOLDING MACHINE ROLLER

John J. Bartizal, Jr., 1015 W. 61st St., Lisle, Ill. 60532

Continuation of Ser. No. 270,218, July 10, 1972, abandoned. This application Oct. 31, 1973, Ser. No. 411,370

Int. Cl. B21b *31/08*

U.S. Cl. 29—127 **3 Claims**



1. A roller for use in driving sheet material to be folded in a folding machine comprising; an elongated cylindrical body having a longitudinal axis; said cylindrical body having a cylindrical outer surface; an axle connected to the body for rotatably supporting said body for rotating the body about its longitudinal axis; an elongated strip friction belt removably mounted on said surface; said friction belt including a first fabric web, a second fabric web over the first fabric web, a rubber body having a portion extending through the first and second fabric webs, a third fabric web above the second fabric web, and said rubber body having a second portion extending through the third fabric web and extending above the third fabric web, said rubber body having a friction surface formed therein above the third fabric web; said friction belt being helically wound on the outer surface of the cylindrical body at an angle to the longitudinal axis with adjacent edges of the belt abutting each other; said friction surface being drivingly engageable with sheet material to be folded in the folding machine; said friction surface having a plurality of straight gripper edges formed integral therewith; each of said gripper

edges having tapered sides to form a sharp edge forming an angle of less than 90° between the sides; and means releasably securing the belt to the cylindrical body.

3,846,885

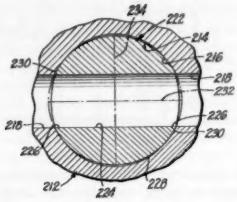
VALVE WITH ELLIPTICAL SEALING

Dean A. Perry, 2235 W. 229th, Torrance, Calif. 90501

Division of Ser. No. 246,765, April 24, 1972, Pat. No. 3,780,985. This application Aug. 1, 1973, Ser. No. 384,453

Int. Cl. B21d *53/00*

U.S. Cl. 29—157.1 R 2 Claims



1. A method of making a rotary valve including a valve body having a valve chamber of substantially elliptical cross section, comprising the steps of:

a. providing a valve body including therein a valve chamber having an axis of rotation and having an internal, peripheral, valve chamber surface which is initially circular in cross section in a plane perpendicular to said axis of rotation and which is provided therein with opposed ports spaced apart along a port axis perpendicular to and intersecting said axis of rotation and spaced apart about said axis of rotation by 180°; and

b. compressing said valve body in the direction of said port axis until said valve chamber surface is permanently distorted into a substantially elliptical cross section in a plane perpendicular to said axis of rotation with the minor axis of the ellipse coinciding with said port axis.

3,846,886

METHOD FOR PRODUCING RIMS

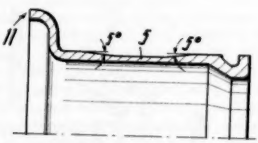
Paul B. Schroder, Hamm, and Gunter Pollkotter, Ahlen, both of Germany, assignors to Liefeld & Co., Ahlen, Germany

Filed June 14, 1973, Ser. No. 370,042

Claims priority, application Germany, June 29, 1972, 22318429

Int. Cl. B21h *1/10*; B21k *1/38*

U.S. Cl. 29—159.1 5 Claims



1. A method of producing a slant shoulder rim comprising the steps of:

forming a metal strip into a ring, welding the strip along a longitudinal seam when forming said ring, thickening the cross-sectional thickness of one end of said ring, forming a profile and drawing a snap ring groove in the thickened end of said ring and thereby reducing the thickness thereof, and erecting a wheel flange into an upright position by a spinning operation using an internal chuck.

3,846,887

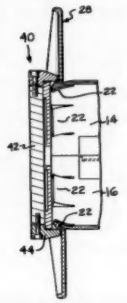
DISASSEMBLY APPARATUS FOR KNOCKDOWN REEL

Glenn Woods, and Anthony J. Frackowiak, both of Erie, Pa., assignors to Hoover Ball and Bearing Company, Saline, Mich.

Filed Nov. 30, 1973, Ser. No. 420,396

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D 5 Claims



1. In combination, a knockdown reel comprising a tubular hub member having at its opposite ends axially extending resilient latch members adapted for simultaneous inward deflection, said latch members having locking abutments projecting radially outward adjacent to their terminal ends, and end flange members mounted on the opposite ends of said tubular hub member, each of said flange members defining in its central portion a socket, said socket having a dimension for receiving in close fitting mating relation an end of said tubular hub member and having holes in its circumference through which said locking abutments project for locking the flange member on said hub member, and a disassembly fixture having axially extending finger portions corresponding in numbers and spacing to said locking abutments, said finger portions defining an inner circumference corresponding to the inner circumference of said socket so that when the fixture is pressed in an axial direction onto the outer end of said socket the fingers will depress said latch members radially inwardly sufficiently far to permit removal of the end flange member from the tubular hub member.

3,846,888

APPARATUS FOR PROVIDING BALL ENDS ON GUITAR STRINGS

William H. Chaffee; Alfred M. Rubio, and Richard L. Lorenz, all of Chicago, Ill., assignors to Columbia Broadcasting System, Inc., New York, N.Y.

Division of Ser. No. 274,810, July 24, 1972, Pat. No. 3,777,613, which is a continuation-in-part of Ser. No. 160,734, July 8, 1971, abandoned. This application June 27, 1973, Ser. No. 373,949

Int. Cl. B21f *15/06*

U.S. Cl. 29—200 B 43 Claims

1. Apparatus for providing a ball end on a guitar string or the like, which comprises:

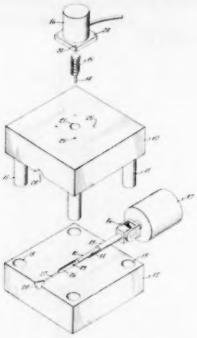
means to effect lateral deformation of an elongated metal element,

said means to effect lateral deformation comprising a movable element adapted to move generally radially of said metal element,

said means to effect lateral deformation further comprising means to move said movable element inwardly to laterally deform said metal element, and

means to effect longitudinal deformation and flow of said metal element while the end of said string is at least substantially enclosed therein, said last-named means

comprising means to define a forming chamber around said metal element, said last-named means further comprising means to force a ram along said forming chamber longitudinally of said metal element and with a force sufficient to cause flow of said metal element without the necessity of effecting melting thereof, said means to force said ram effecting shifting thereof through a distance sufficient to cause said metal element to at least substantially conform to the shape of said chamber, and to effectively anchor said string end in said metal element.



3,846,889

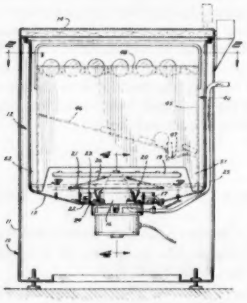
LENS PROCESSING APPARATUS

Jack L. Reisman, 4713 E. Coventry Rd., Minnetonka, Minn. 55343

Division of Ser. No. 234,902, March 15, 1972. This application Aug. 17, 1973, Ser. No. 389,173

Int. Cl. B23p *19/00, 17/00*

U.S. Cl. 29—200 D **8 Claims**



1. Apparatus for processing lenses having mounting blocks adhesively secured thereto by a low melting point adhesive that is immiscible in aqueous solutions comprising, in combination;

a tub having a downwardly extending convex bottom and a sealable cover;

a pump for spraying an aqueous washing solution upwardly into said tub, said pump being mounted substantially at the lowest level of the bottom of said tub;

a drain disposed in the bottom of said tub adjacent said pump;

means for disposing lenses, having mounting blocks adhesively secured thereto, adjacent the top of said tub and for receiving the blocks after the adhesive is liquified; and

means adjacent said pump for excluding liquified adhesive from said pump.

3,846,890

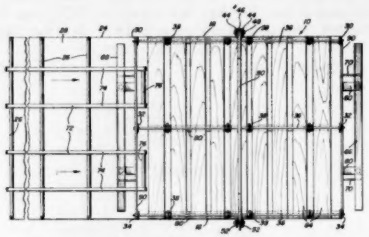
PALLET DISASSEMBLY MACHINE

Raymond J. Bielkiewicz, 513 Rienzi Dr., La Place, La. 70068

Filed Jan. 2, 1974, Ser. No. 429,714

Int. Cl. B23p *19/00*

U.S. Cl. 29—200 D **8 Claims**



1. A pallet disassembly machine comprising a support table including opposite sides and opposite ends, at least three transversely spaced pairs of longitudinally spaced and aligned uprights supported from opposite end portions of said table, an elongated support member extending between and supported from the upper end portions of each pair of uprights, each of said support members including a plurality of depending abutment members supported therefrom and shiftable longitudinally therealong, and a plurality of elongated longitudinal abutment members equal in number to the number of spaces between adjacent pairs of uprights, said longitudinal abutment members being adapted to be inserted lengthwise between adjacent stringers of a pallet disposed on said table with its deck boards extending transversely of said table, and a pair of elongated transverse abutment members supported at opposite ends of said table for vertical shifting relative to said table and engaging the opposite ends of and raising said elongated abutment members to force the upper deck boards of a pallet disposed on said table from the pallet stringers thereof with which said depending abutment members are adapted to be engaged, and means connected between said table and said transverse abutment members for selectively raising the latter.

3,846,891

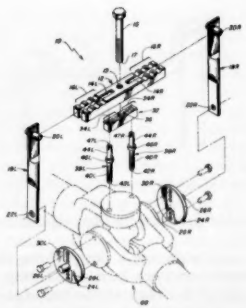
APPARATUS FOR REMOVING FLANGED CUP BEARINGS FROM HEAVY DUTY UNIVERSAL JOINTS

Carl L. Elg, 5224 38th Ave. S., Minneapolis, Minn. 55417

Filed Dec. 20, 1973, Ser. No. 426,970

Int. Cl. B23p *19/04*

U.S. Cl. 29—201 R **5 Claims**



5. A tool for facilitating the removal of flanged cup bearings from the yokes of a heavy duty universal joint comprising:

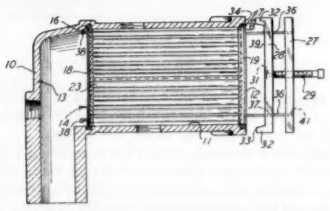
a. first and second disc members adapted to be connected to the opposed legs of the universal joint yoke orthogonal to the yoke whose flanged cup bearing is to be removed;
b. first and second linkages having first and second ends, said first ends being coupled to said first and second disc members;
c. first and second pin members having a threaded end and a slotted end with a cylindrical collar located between said threaded and slotted ends, said threaded end being adapted to be inserted into threaded holes in the leg of the yoke whose bearing is to be removed;
d. a pressure plate having first and second apertures therethrough, adapted to be fitted onto the slotted ends of said first and second pin members to abut said collar;
e. a bar member having means at each end thereof for coupling to the second ends of said first and second linkages and a threaded hole located midway between said two ends of said bar members; and
f. a threaded bolt adapted to be inserted into the threaded hole in said bar member to contact said pressure plate such that as said bolt is turned into said threaded hole, the pressure plate and said bar are forced apart causing the cross of the universal joint to move toward said pressure plate forcing the flanged cup member from said yoke member leg.

3,846,892

EXTRACTOR TOOL FOR HEAT-EXCHANGER CORE

Fred M. Young, Racine, Wis., assignor to Young Radiator Company, Racine, Wis.

Filed July 9, 1973, Ser. No. 377,577
Int. Cl. B23p *19/04*
U.S. Cl. 29—202 R **4 Claims**



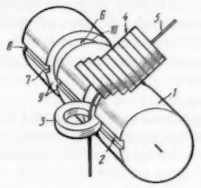
1. An extractor tool for use in extracting from a casing a heat exchanger core which has elongated heat-exchange tubes and a header plate at each axial end of said tubes, comprising two rigid members with one of said members having two spaced-apart bearing surfaces offset from the remainder of said one member and disposed at the opposite ends thereof for the purpose of spanning said core and being in contact with said casing only, a screw extending between said members for moving them apart in response to rotation of said screw in one direction, two elongated fingers attached at one end of each thereof to the other of said members and slidably extending through said one member and therebeyond and being of a spring material to be flexible in the extending portions in the directions transverse to the length of each of said fingers, and an offset portion on the extending end of each of said fingers and with said offset portions respectively extending to only one side of each of said fingers and extending in opposite directions relative to each other and being offset in said transverse directions for the purpose of hooking onto a remote end of said heat-exchange tubes when said fingers are inserted into said tubes.

3,846,893

MECHANISM FOR FEEDING AND FIXING MAGNETIC CORES IS A MEMORY MATRIX INTERWEAVING DEVICE

Jury Alexandrovich Burkin, Tsvetnoi proezd 29, kv. 24, and Jury Emelyanovich Seleznev, Vesenny proezd 4a, kv. 16, both of Novosibirsk, U.S.S.R.

Filed Aug. 15, 1973, Ser. No. 388,415
Claims priority, application U.S.S.R., Dec. 18, 1972, 1862912
Int. Cl. H05k *13/04*
U.S. Cl. 29—203 MM **1 Claim**



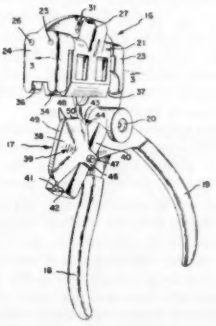
1. A mechanism for feeding and fixing magnetic cores strung in piles on wires in a memory matrix interweaving device, said mechanism including a shaft having at least one longitudinal slot for catching said magnetic cores, and recesses located over the length of the shaft and extending transversely to said longitudinal slot, said recesses having a width large enough to accommodate therein the bottom magnetic cores of said piles, and a depth exceeding the depth of said longitudinal slot, as a result of which the edges provided by the bottom of said longitudinal slot and the side walls of said recesses define two stops to hold each said magnetic core accommodated in said longitudinal slot, against being displaced therealong.

3,846,894

METHOD AND TOOL FOR PREPARING THREE CONDUCTOR-CABLE FOR ELECTRICAL FIXTURE

Stuart L. Parsons, Clearwater, and James Albert Kloth, St. Petersburg, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Continuation of Ser. Nos. 284,804, Aug. 30, 1972, abandoned, which is a continuation-in-part of Ser. No. 267,331, June 29, 1972, abandoned, which is a continuation-in-part of Ser. No. 232,595, March 7, 1972, abandoned. This application Aug. 23, 1973, Ser. No. 390,977
Int. Cl. H01t *43/04*, *43/00*
U.S. Cl. 29—203 H **22 Claims**



1. A tool for preparing a sheathed cable having two outer insulated conductors at opposite sides of a central conductor

for electrical connection to an electrical fixture having transversely spaced electrical contacts therein without severing said conductors, said tool comprising:

a first clamping jaw,

an anvil mounted on said first clamping jaw and having a supporting surface arranged to extend along and support the central portion of said cable, said anvil being narrower than the space between said outer conductors,

a pair of cable gripping members mounted on said first clamping jaw for movement between an inner position at which they grip and support opposite outer portions of such cable supported on said anvil, and an outer position at which they grip and support said outer portions after lateral deflection of said outer conductors for respective engagement with said contacts, yieldable means biasing said cable gripping members toward said inner position,

a second clamping jaw,

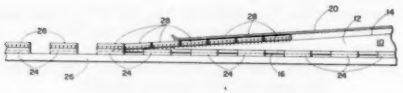
a pair of cutting blades mounted on said second clamping jaw, said cutting blades having cutting edges extending parallel to one another adjacent opposite edges of said anvil and wedging surfaces extending rearwardly and outwardly at an acute angle from said cutting edges, and means to cause relative movement of said first and second clamping jaws toward one another to cause said cutting edges first to slice through the sheath of a cable supported on said anvil along two parallel lines approximately coinciding with the inner sides of the outer conductors therein and then to cause said wedging surfaces to bend said outer conductors outwardly away from said central conductor, said gripping members being thereby forced outwardly against the resistance of said yieldable means to said outer positions.

3,846,895

DUAL-IN-LINE PACKAGE EXTRACTION TOOL

Michael A. Cosham, Richmond, Ontario, and Dieter O. Marx, Stittsville, Ontario, both of Canada, assignors to Microsystems International Limited, Montreal, Quebec, Canada

Filed Sept. 26, 1973, Ser. No. 400,941
Int. Cl. B23p *19/04*
U.S. Cl. 29—203 H **3 Claims**



1. An extraction tool for sequentially removing and gathering a plurality of dual-in-line multipin integrated circuit packages from a plurality of dual-in-line integrated circuit sockets rectinlinearly arranged in end-to-end configuration on a planar supporting surface, each of said sockets being provided with a rectangular central slot, of substantially uniform width and depth, running parallel to the rows of pins of said each of said sockets, said extraction tool comprising;

a. a substantially rigid longitudinal member having a pair of substantially parallel wedge-shaped side faces, bridged by an upper edge of a thickness less than the minimum distance between the two parallel rows of pins of any one of said integrated circuit packages and having a lower edge of a thickness less than the width of the rectangular central slot of any one of said sockets, the thickness of said lower edge less than the thickness of said upper edge by a groove running longitudinally along the portion of each wedge-shaped side face near the lower edge of said longitudinal member to form a rigid longitudinal member of substantially T-shaped cross-section, the wedge-shaped side faces having a width increasingly tapering from a first measure less than the depth of the rectangular central slot of any one of said sockets to a second measure greater than the maximum distance the pins of said packages extend into the dual-in-line sockets;

b. a resilient longitudinal cover connected to said wedge like member and overlying, in spaced relationship, the upper edge and a portion of at least one wedge-shaped side face thereof by a distance sufficient to permit a row of dual-in-line integrated circuit packages to straddle said upper edge and readily slide along the length of said longitudinal member without buckling sufficiently to jam out of sequence;

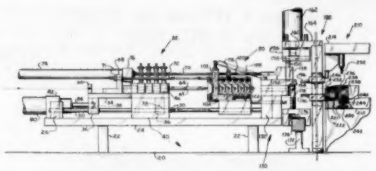
whereby, by sliding the lower edge of said longitudinal member along the rectangular central slots of the dual-in-line integrated circuit sockets, the dual-in-line integrated circuit packages are sequentially removed from their corresponding dual-in-line integrated circuit sockets and slid astraddle and along the upper edge of said longitudinal member into the space bounded by said longitudinal member and said longitudinal cover.

3,846,896

TERMINAL BLOCK ASSEMBLY APPARATUS

Fransiscus Cornelius Bakermans, Shiremanstown, and William Charles Thoms, East Berlin, both of Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 15, 1973, Ser. No. 406,304
Int. Cl. H01t *43/04*
U.S. Cl. 29—203 DT **21 Claims**



1. An apparatus for assembling terminal blocks having a plurality of spring wire contacts interconnected with a plurality of lead wires in a terminal block, comprising

a terminal block assembly station for positioning a terminal block for receiving a plurality of spring wires and interconnecting the spring wires with a plurality of lead wires, first means for positioning the plurality of spring wires in alignment with a plurality of spaced holes in the terminal block at said terminal block assembly station for insertion through the spaced holes in the terminal block,

means for feeding a plurality of spring wires through the spaced holes in the terminal block at said terminal block assembly station,

second means for positioning the spring wires inserted through the spaced holes in the terminal block in alignment with the lead wires at the terminal block assembly station,

means for positioning the plurality of lead wires at said terminal block assembly station,

means for splicing the spring wires and lead wires at said terminal block assembly station to form a permanent electrical interconnection,

means for retracting the spliced interconnection between the spring wires and the lead wires into the terminal block, and

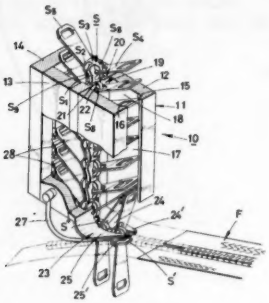
means for severing the plurality of continuous spring wires a spaced distance from the terminal block in said terminal block assembly station to provide a plurality of spring wire contacts on the terminal block interconnected to a plurality of lead wires within the terminal block.

3,846,897

SLIDER ASSEMBLING DEVICE FOR SLIDE FASTENER CHAIN

Hisashi Douri, Uozu, Japan, assignor to Yoshida Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 25, 1973, Ser. No. 400,539
Claims priority, application Japan, Oct. 3, 1972, 47-99280
Int. Cl. B23p 19/04
U.S. Cl. 29—207.5 SL 5 Claims



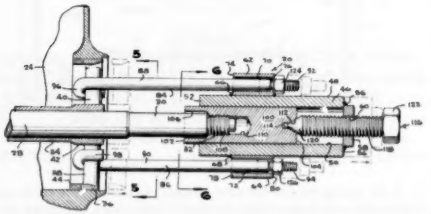
1. A device for assembling on a slide fastener chain sliders of the type including a pivotally supported pull tab, which device comprises a vertically elongated casing having an opening therein for accommodating a series of sliders that are transported by their own gravity, a guiding means disposed in said opening and guiding the movement of said series of sliders, a holding means integral with said guiding means and holding a leading one of said sliders in position for assembly on the slide fastener chain, a spring member for releasably holding said leading slider, and means for arresting and preventing said series of sliders from moving backward during the assembling operation.

3,846,898

PULLER FOR BEARING CARRIER

Robert M. Kerr, Winter Garden, Fla. 32787

Filed Apr. 2, 1973, Ser. No. 346,938
Int. Cl. B23p 19/02
U.S. Cl. 29—259 4 Claims



1. An implement for extraction of a component being positioned about a fixed shaft, the implement comprising:

an elongated tubular main sleeve including a sleeve outer side, the sleeve having an inward end and an outward end and the sleeve defining a slideway;

a nut member, having a threaded bore formed therein, said bore being axially aligned with the slideway; the nut member being fixedly mounted at the outward end of the sleeve;

a pair of secondary sleeve members of tubular form fixedly secured to the outer side of the main sleeve at substantially diametrically opposite locations thereon;

the secondary sleeve members having passageways therein arranged substantially parallel to the slideway of the main sleeve;

hook members, each including an elongated shaft, a hook end and an opposite threaded end, the shafts extending through the secondary sleeves, and having nuts engaged on the threaded ends thereof with the hook ends projecting forwardly of the inward end of the main sleeve, the hook members engaging said web;

a thrust member slidably positioned in the slideway, the thrust member having a first end extended in the direction of the inward end of the main sleeve, and a second end extending toward said nut member;

a thrust actuator comprising a threaded shaft contacting the second end of the thrust member, the shaft being threadedly engaged in the nut member, rotation of the threaded shaft forcing the thrust member against said fixed shaft and causing the withdrawal of the web from the housing; the first end of the thrust member has a chamber formed therein with a threaded chamber section; and

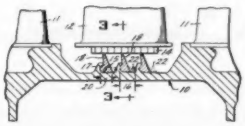
the fixed shaft is outwardly threaded for connection with said chamber section.

3,846,899

A METHOD OF CONSTRUCTING A LABYRINTH SEAL

Donald F. Gross, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 276,076, July 28, 1972, abandoned. This application Jan. 30, 1974, Ser. No. 438,031
Int. Cl. B23p 7/00
U.S. Cl. 29—401 5 Claims



1. A method for constructing a labyrinth seal between relatively rotating members, said method comprising the steps of: positioning a tooth segment having a base portion in cooperation with a first of said relatively rotating members; and

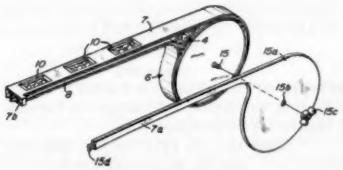
disposing a retaining deposit upon said base portion for securing said tooth segment upon said first member.

3,846,900

METHOD OF APPLYING RETAINER RINGS FROM INTERCONNECTED RETAINER RING SUPPLY

David E. Weglage, Dayton, Ohio, assignor to Walter Becker, Kettering, Ohio, a part interest

Continuation of Ser. No. 233,137, March 9, 1972, abandoned. This application Sept. 13, 1973, Ser. No. 396,841
Int. Cl. B23p 17/00
U.S. Cl. 29—413 4 Claims



1. The method of applying retainer rings, each of which comprises two resilient legs spaced from each other at its front

portion and adapted to be forced and snapped into a groove in an object by pressing said legs into said groove initially to spread said legs apart, said rings being arranged successively in the form of a flat strip with the legs of each successive ring integrally connected to the rear portion of the respective directly preceding ring and having the leg ends of one end ring free, said method comprising passing said strip through a substantially rigid hand carried holder, projecting said one end ring from the adjacent end of the holder with its legs outward of the last mentioned end of the holder, pressing said legs of said projected ring into said groove while spreading said last mentioned legs resiliently in the plane of said projected ring and to embrace said object and to engage a portion in said groove, and bending said strip at the juncture of said one end ring with the next succeeding ring by using said holder as a handle to bend and break said strip between said one end ring and the directly adjacent ring while said one end ring is held rigid and clamped-in in said groove.

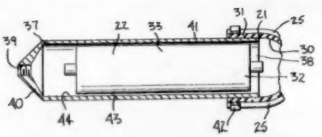
3,846,901
METHOD OF MOUNTING A RESILIENT SLEEVE ON A CONVEYOR ROLLER

John R. Lovett, 23604 Lake Rd., Bay Village, Ohio 44140

Division of Ser. No. 216,847, Jan. 10, 1972, abandoned, which is a continuation-in-part of Ser. No. 43,349, June 4, 1970, abandoned. This application Apr. 19, 1973, Ser. No. 352,485

Int. Cl. B23p *11/02*

U.S. Cl. 29—450 **1 Claim**



1. A method of mounting a resilient tubular sleeve of elastomeric material on a closed-end conveyor roller whose external diameter is greater than the un-stressed internal diameter of said sleeve, comprising the steps of:

a. Slidably nesting said closed-end conveyor roller into a close-fitting hollow cylinder to provide a restricted fluid flow annular passageway around said roller,

b. Expanding one end of said sleeve sufficiently to mount it in coupled relationship to an open end portion of said cylinder,

c. Injecting fluid under pressure into the opposite end of said cylinder to displace said roller into sealing engagement with the unexpanded portion of said sleeve to create a fluid barrier,

d. Maintaining said fluid pressure to cause fluid flow through said annular passageway to progressively open said barrier and expand the remainder of said sleeve while displacing said roller by said fluid pressure into said expanded remainder until said roller has attained and desired positional longitudinal relationship to said sleeve, and

e. Relieving said pressure to permit said sleeve to contract into gripping relationship to said roller.

3,846,902
METHOD OF MOUNTING A HANDLE TO A VESSEL

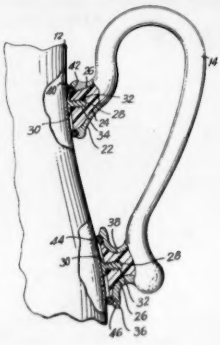
Burr Sebring, Barrington, R.I., assignor to Gorham, a division of Textron Inc., Providence, R.I.

Filed Apr. 21, 1972, Ser. No. 246,262

Int. Cl. B23p *3/00, 25/00*

U.S. Cl. 29—458 **4 Claims**

1. A method of forming a rigid, thermally insulated connection between a liquid vessel and a heat-conductive handle having at least one hollow end portion positioned proximate to said vessel, comprising the steps of; fastening at least one stud means to said vessel so as to extend therefrom; positioning a heat-insulating ring member about said stud means, one side wall of said ring member contacting the surface of said vessel about said stud means; filling the hollow end portion of said handle with a self-setting, heat-insulating, cementitious



material; and superimposing the hollow handle end portion containing said cementitious material over said stud means in spaced relationship therewith, the end surface of said handle end portion contacting the opposite side wall of said ring member so as to form a thermally insulated rigid gripping assembly between said handle and said vessel upon setting of said cementitious material.

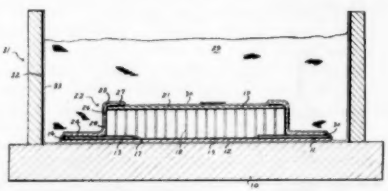
3,846,903
VACUUM BRAZING TANTALUM ALLOYS

Edward J. Rupert, Wheatridge; Monroe W. Meyer, Littleton, and Gerald E. Uhland, Aurora, all of Colo., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed July 13, 1973, Ser. No. 379,024

Int. Cl. B23k *1/04*

U.S. Cl. 29—487 **8 Claims**



1. In a process for vacuum brazing tantalum alloy structural elements, the improvement which comprises the steps of:

a. positioning braze foil of a columbium-vanadium alloy between surfaces of the elements to be joined:

b. coating surfaces of the elements that are to be in contact wih a tungsten hearth plate and tungsten pellets with yttria powder;

c. positioning the elements on the tungsten hearth plate disposed in a vacuum heating zone so that the yttria coated lowermost surface of the elements rests on the hearth plate;

d. placing tungsten pellets on the yttria coated uppermost surface of the elements, thereby applying a downward pressure thereon and controlling the gap between the surfaces to be joined;

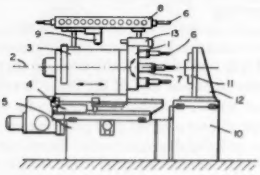
e. heating the elements in the heating zone under a vacuum to a temperature sufficient to melt the foil; and
f. after soaking at that temperature for from 3 to 8 minutes allowing the elements to cool gradually to room temperature.

3,846,904

MACHINING CENTER WITH A STORAGE DRUM ROTATABLE ABOUT A HORIZONTAL AXIS

Hans Kuhnert, Wiesloch, Germany, assignor to Heidelberger Druckmaschinen AG, Heidelberg, Germany

Filed Jan. 20, 1972, Ser. No. 219,318
Claims priority, application Germany, Jan. 21, 1971, 2102860
Int. Cl. B23q 3/157
U.S. Cl. 29—568 5 Claims



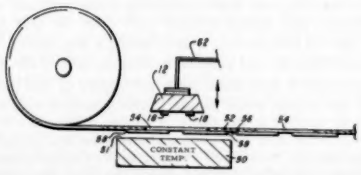
1. Machining center comprising at least one tool drum rotatable about a substantially horizontal axis, said tool drum bein displaceable in the direction of said axis, said tool drum having one side through which said axis passes facing a workpiece with said side movable along said axis toward and away from said workpiece, a plurality of spindle sleeves disposed substantially parallel to said axis for accommodating respectively associated tools disposed on said one side of said drum facing toward said workpiece, said spindle sleeves disposed on said one side through which said axis passes being placeable into respective working positions with change of height by rotation of said drum about its axis, a cross slide at an elevation below said tool drum, a head stock on said cross slide for supporting said rotatable tool drum, said head stock being disposed on said cross slide for slidable displacement thereon toward a workpiece, a tool storage unit disposed adjacent said head stock, and a tool exchanging arrangement disposed between said tool storage unit and said tool drum whereby said tool exchanging arrangement will remove a tool from a spindle sleeve in said tool drum and replace it with another tool from said tool storage unit.

3,846,905

ASSEMBLY METHOD FOR SEMICONDUCTOR CHIPS

James G. Harper, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 9, 1973, Ser. No. 377,844
Int. Cl. H01l 7/00
U.S. Cl. 29—589 2 Claims



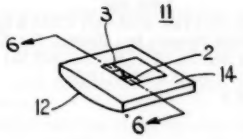
1. A method for bonding a metal lead which is formed on one surface of a plastic strip to extend over an edge of an aperture therethrough to a contact on a surface of a semiconductor body comprising the steps of:
a. positioning said lead adjacent a support which is maintained at a constant elevated temperature sufficient for alloying said lead to said contact;
b. aligning said semiconductor body with said aperture in said plastic strip such that said contact directly overlies said metal lead;
c. inserting said body through said aperture such that said contact deflects said lead into thermal contact with said support, thereby heating said lead and said contact to alloy a portion of said lead to said contact; and
d. withdrawing said body from said aperture, the tension of said deflected lead maintaining contact between said lead and said contact during the interval required for said alloyed portion to solidify.

3,846,906

METHODS OF MANUFACTURING MAGNETIC TRANSDUCING HEADS

Derek Frank Case, Sunbury-on-Thames, England, assignor to International Computer Limited, London, England

Filed June 5, 1973, Ser. No. 367,302
Claims priority, application Great Britain, June 6, 1972, 26230/72
Int. Cl. G11b 5/42
U.S. Cl. 29—603 6 Claims



1. A method of manufacturing a magnetic transducing head including the steps of fabricating a pole piece unit having at least one pair of ferrite pole pieces spaced apart by a predetermined non-magnetic transducing gap, the pole pieces being located within a glass-ceramic block having an operating surface with a profile effective to cause the transducing head to fly out of contact over a record medium; independently fabricating a yoke assembly having a magnetic yoke for each pair of pole pieces, each yoke having at least one coil electromagnetically coupled thereto; dynamically testing the profiled pole piece unit in conjunction with the record medium independently of said yoke assembly; testing said yoke assembly independently of said pole piece unit; and aligning and securing together a satisfactorily tested yoke assembly and a satisfactorily tested pole piece unit so that the magnetic yoke and the pole pieces constitute a core for a magnetic transducing head.

3,846,907

CONTINUOUS GUIDANCE METHOD AND APPARATUS FOR INSTALLING DIP DEVICES ON CIRCUIT BOARDS

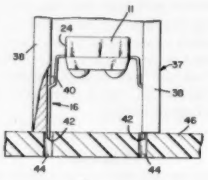
Borislav Ivanovic, 615 Almar, Santa Barbara, Calif. 93105

Continuation of Ser. No. 99,338, Dec. 18, 1970, abandoned.
This application Dec. 26, 1972, Ser. No. 318,203
Int. Cl. H05k 3/30, 13/02
U.S. Cl. 29—626 8 Claims

1. The method of guiding while inserting into a circuit board a dual in-line package device having opposed sets of terminals extending outward from the package and bent to permit insertion of the terminals in a circuit board socket, each of said terminals having a shoulder portion adjacent the package and a leg portion remote from the package and narrower than the shoulder portion, the leg portions of each set being located in a plane distinct from the shoulder portions thereof, comprising the steps of:

receiving the device within a guide member having opposed grooved walls outboard of the shoulder portions while constraining each of the individual terminal leg portions on three sides throughout the major extent of the narrow portion of the terminal;

locating the guide member and device adjacent a circuit board socket such that the leg portions are aligned with corresponding socket openings;



moving the device from its position within the guide member toward the circuit board and inserting the leg portions into the respective socket openings while continuing to constrain the leg portions during said movement; and

removing the guide member from its position adjacent the circuit board without spreading said walls while leaving the device mounted in said socket.

3,846,908

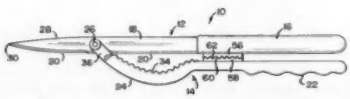
CLAM, OYSTER AND NUT CRACKER

Joseph Allievi, 4610 Pleasure Dr., Holiday, Fla. 33589

Filed Oct. 24, 1973, Ser. No. 409,321

Int. Cl. B26b *13/06*

U.S. Cl. 30—120.1 **4 Claims**



1. An opening device designed primarily to open shellfish or the like, said device comprising: a first leg means and a second leg means attached to one another; said first leg means comprising blade means and a first handle means formed thereon, said blade means and said first handle means defining the opposite extremities of said first leg means and disposed in substantially collinear relation to one another; said blade means including a first cutting edge extending the entire length of said blade means and having a substantially linear configuration and being disposed adjacent said second leg means; pivot means mounted between opposite ends of said blade means, said pivot means interconnected between said blade means and one end of said second leg means including one end thereof defined by a curvilinear portion disposed in facing, substantially coplanar relation to said first cutting edge; said second leg means comprising a second handle means connected to said curvilinear portion; a second cutting edge having a curvilinear configuration disposed on and substantially corresponding to that of said curvilinear portion, said second cutting edge formed between said second handle means and the end of said second leg means connected to said pivot means; said first and second leg means movable between an open and closed position, said closed position defined by substantially parallel orientation of said first and second handle means, whereby said first cutting edge between said pivot means and said first handle means and second cutting edge are engageable with the approximate center of an object therebetween thereby accomplishing separation of said object about said center.

3,846,909

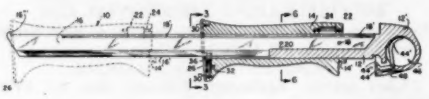
COMBINATION OF A KNIFE AND SHARPENER

Robert E. Clarke, 1410 Saratoga Dr., Bel Air, Md. 21014

Filed Oct. 29, 1973, Ser. No. 410,751

Int. Cl. B24b *3/54;* **B26b** *11/00*

U.S. Cl. 30—138 **7 Claims**



1. The combination of a knife, including a handle means and a cutting blade, and a sharpener for the cutting edge of the blade, comprising:

a. said handle means having an inner handle member having means for attaching the inner handle member to one end of the blade wherein the knife blade is adapted to extend outwardly from one end of the inner handle member;

b. an outer handle member adapted to be slidably receivable over at least a substantial portion of the inner handle member and slidably removable therefrom over the end of the inner handle member from which the blade extends, and slidable along the knife blade;

c. means carried by the handle members for releasably securing the outer handle member in telescoped position over the inner handle member;

d. means for supporting the sharpening means on the outer handle member on its end adjacent the extended blade, and means for resiliently urging the sharpening means toward the blade and in contact with the cutting edge thereof when the outer handle member is released from the inner handle and moved along said blade.

3,846,910

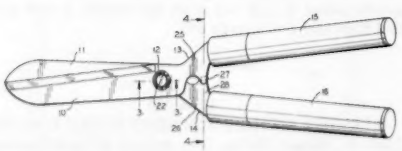
SHEAR BUMPER

Robert T. Davis, Kirtland, Ohio, assignor to True Temper Corporation, Cleveland, Ohio

Filed Sept. 24, 1973, Ser. No. 400,010

Int. Cl. B26b *13/00*

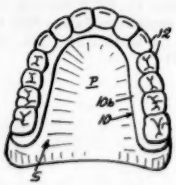
U.S. Cl. 30—271 **7 Claims**



6. In a pair of shears comprising upper and lower blades each having a rearwardly projecting gripping means for opening and closing movements of the blade in a plane; pivot means connecting said blades including resilient means resiliently urging said blades toward each other at said pivot means; each of said gripping means having a stop rigidly fixed with respect thereto and adapted to abut the stop of the other gripping means to limit the closing movements of said blades; at least one of said stops having abutting surface means inclined with respect to the plane of closing movement of the shears; the other said stop having abutting surface means for engaging said first mentioned abutting surface means whereby in response to forceful closing contact, the stops are cammed apart and the associated gripping means are flexed apart in opposite directions perpendicular to the direction of closing movement, said stops and said abutting surface means affording unrestrained flexing of said gripping means in said oppo-

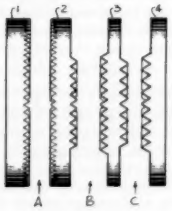
site perpendicular directions against the bias of said resilient means at all times whereby said resilient means absorbs a substantial portion of the impact shock.

3,846,911
PREFORMED BLANKS FOR FALSE TEETH SET-UP
Theodore Wichner, Miami Beach, Fla., assignor to Valeria O. Wichner, Miami Beach, Fla., a part interest
Filed Jan. 5, 1973, Ser. No. 321,257
Int. Cl. A61c *13/00*
U.S. Cl. 32—2 **5 Claims**



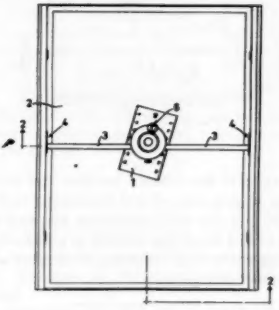
1. A dental ridge blank provided in a range of sizes and arch shaped configurations corresponding to those of the human dental ridge, said blank being preformed of a material and of a limited thickness to become an integral part of the completed denture, and having a cut-out portion for positioning therein the support end of false teeth of standard construction, said positioning permitting relative movement of the teeth for adjustment purposes.

3,846,912
INDEXING MECHANISM
Richard J. Newbould, 443 S. Union Ave., Kenilworth, N.J. 07016
Continuation-in-part of Ser. No. 211,366, Jan. 10, 1972, abandoned. This application Dec. 13, 1972, Ser. No. 313,821
Int. Cl. B23q *17/04*
U.S. Cl. 33—1 D **8 Claims**



1. An indexing mechanism comprising at least three relatively movable members, the first and second of said members each having a set of teeth respectively of different pitches, at least one of said pitches not being evenly divisible into a predetermined dimension corresponding to the dimension of the other pitch, and the third member being an adaptor member for the other two and having two sets of teeth thereon respectively complementary to and meshingly coengageable with the teeth on each of said first and second members, said members all being separable to disengage said teeth thereon to permit relative movement between said members to establish a new predetermined meshing position between said first, second and third members, and thereby provide a desired relative position between said first and second members.

3,846,913
APPARATUS FOR DETERMINATION OF COURSES ON NAUTICAL CHARTS ETC.
Odd Olov Johansson, Medsommarvagen 215-126-35, Hagersten, Sweden
Filed May 15, 1972, Ser. No. 253,037
Int. Cl. B43l *13/08*
U.S. Cl. 33—76 V **6 Claims**



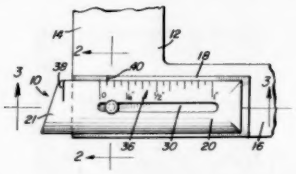
1. Apparatus for determining courses on a chart characterized by:
   a. a rectangular plate which is adapted to hold a chart thereon,
   b. parallel racks mounted along two opposite sides of said plate,
   c. a guide shaft disposed above and parallel to said rectangular plate,
   d. gear wheels provided at the opposite ends of said guide shaft,
   e. said gear wheels being positioned to mesh with and engage the underside of said parallel racks,
   f. a carrying device slideably mounted on said guide shaft so as to be moveable along said shaft,
   g. said carrying device being associated with a course rule that is rotatable about a vertical shaft that is perpendicular to said plate,
   h. said course rule being adapted to bear against a chart placed on said plate,
   i. said parallel racks being spaced above said plate with the teeth of said racks facing said plate,
   j. a spring force acting between the carrying device and the course rule so as to urge the course rule towards the chart and the carrying device away from the chart,

whereby there is achieved great reading accuracy between the course rule and the chart and great exactness in the movement of the guide shaft in a direction normal to its axis is obtained by the gear wheels of the guide shaft by virtue of their being firmly urged against the teeth of the racks.

3,846,914
DRAFTSMAN'S DEVICE
Lucilo Lam, and Guillermo Hernandez Cartaya, both of 2121 Ponce de Leon Blvd., Miami, Fla. 33134
Filed May 31, 1973, Ser. No. 365,562
Int. Cl. B43l *13/24*
U.S. Cl. 33—110 **7 Claims**

1. A draftsman's device for facilitating the drawing of equidistant parallel lines comprising a straight edge instrument having a base and a leading edge perpendicular to said base; an elongated mounting element fixedly mounted on said base and carrying a distance reference mark; said elongated mounting element defining a groove having a wider base than its top, an elongated indicating element with a tongue projection slidably mounted on said mounting element and mating with

said groove, said indicating element having a leading portion extending past the leading edge of said instrument and being provided with a line reference mark spaced from the leading edge of said instrument, said indicating element carrying a scale thereon associating with said distance reference mark, the distance measured on said scale by said distance reference



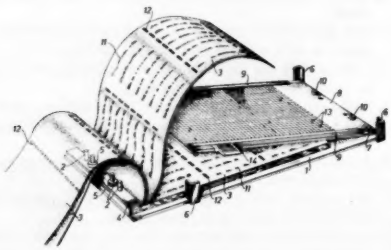
mark being equal to the distance between said line reference mark and the leading edge of said instrument; said indicating element defining a slot with lock means mounted in said slot and secured to said mounting element to selectively lock said indicating element to said mounting element in a predetermined positional relationship.

3,846,915

MEANS FOR MANUAL DATA REGISTRATION

Herbert Mauritz Obermark, deceased, late of Sollentuna, Sweden, and by Tommy Ludvig Wilhelm Ekholm, administrator, Stockholm, Sweden, assignors to Erik Gunnar Ekman, Ska, Sweden

Filed June 9, 1971, Ser. No. 151,182
Int. Cl. B41n *1/24*
U.S. Cl. 33—174 R **7 Claims**



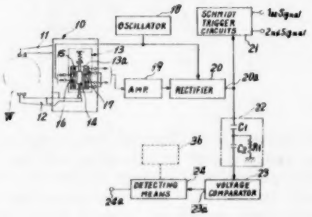
1. A device for manual registration of coded data, especially of data intended to be subjected to subsequent automatic process, comprising, in combination, a registration medium of generally rectangular configuration having a plurality of different marking locations arranged in a field of mutually perpendicular columns and rows, a plurality of pattern sheets of generally rectangular sheet-like configuration successively provided with displaced columns of directive information and marking indicia for guiding the recordal of responses to such directive information with said directive information and the indicia related thereto being in rows perpendicular to said columns and with said indicia being in mutually displaced columns on successive ones of said plurality of pattern sheets, and a carrier for said registration medium and said plurality of pattern sheets, said carrier comprising means for simultaneously securably retaining said plurality of pattern sheets and registration medium in predetermined position and for insuring successive accurate mutual positioning of said registration medium and each of said pattern sheets, with each of the marking indices being arranged in a unique position from each of the other marking indices of the respective pattern sheets corresponding to said different marking locations of said registration medium so that marks made corresponding to any of said marking indices appear in a separate position of said field of said registration medium.

3,846,916

MEASURING SYSTEM FOR ROUNDNESS OF WORKPIECE

Kazuo Moriya, Kariya, and Isao Suzuki, Okazaki, both of Japan, assignors to Toyoda-Koki Kabushiki Kaisha, Kariya-shi, Aichi-ken, Japan

Filed May 11, 1973, Ser. No. 359,420
Claims priority, application Japan, May 16, 1972, 47-48717
Int. Cl. G01b *7/28, 7/34, 19/26*
U.S. Cl. 33—174 Q **6 Claims**



1. A system, for measuring the roundness of a workpiece during working, comprising; a feeler means adapted to be held in abutting engagment with a workpiece so as to respond to changes of diameter of the workpiece, a displacement detector connected to said feeler means for generating an output signal in response to the displacement of said feeler means, circuit means for converting said output signal to a voltage signal including a direct current portion corresponding to the decrease of a diameter of the workpiece and an alternating current portion corresponding to the deviation of roundness of the workpiece, filter circuit means for eliminating said direct current portion of the voltage signal, a voltage comparator having a pre-set reference voltage corresponding to an allowable roundness connected to said filter circuit means for comparing said alternating current portion of the voltage signal with said pre-set reference voltage and thereby generating a series of pulses until the voltage of said alternating current portion of said voltage signal drops to the value of said reference voltage, and detecting means connected to said voltage comparator for detecting the decay of charging voltage of said pulses to a predetermined limit to thereby generate a signal of roundness indicative that the roundness of the workpiece is within said predetermined limit.

3,846,917

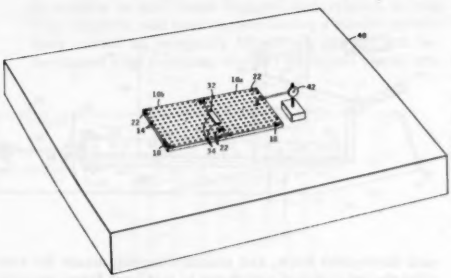
MEASURING AND LOCATING SYSTEM COMPONENTS

Alexander G. Blakey, San Diego, Calif.

Division of Ser. No. 300,547, Oct. 25, 1972, Pat. No. 3,793,738. This application July 30, 1973, Ser. No. 383,928
Int. Cl. G01b *5/14, 3/30*
U.S. Cl. 33—180 R **6 Claims**

1. A measuring and locating system which comprises:
a thin planar tile having a plurality of recesses formed in one substantially flat surface;
said recesses arranged in a uniform repeating geometric pattern;
said tile adapted to be placed in contiguous relationship with other similar tiles on a substantially flat table surface

so that said recess pattern is extended over a greater area; positioning means adapted to contact adjacent tiles and position them in a selected spatial relationship;



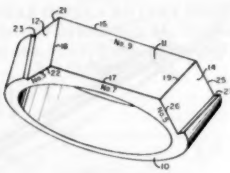
locking means to secure adjacent tiles in a fixed relationship when located as desired; and

height adjusting means in each tile to level the tile and set the height thereof.

3,846,918
GOLF AID

Paul A. Wehlau, 397 Cascade Dr., Fairfax, Calif. 94930

Filed Nov. 16, 1973, Ser. No. 416,611
Int. Cl. G01c *3/24*; **A44c** *9/00*
U.S. Cl. 33—262 **7 Claims**



1. A distance measuring device comprising

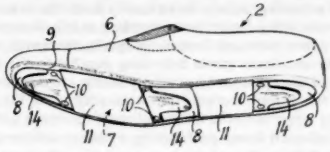
a ring adapted to fit on the finger of an observer, a plurality of facets on said ring having edges of different dimensions, the edges of said facets arranged on said ring in a manner permitting comparison of individual edges with said known dimension of said distant object when said ring is worn on a finger of said observer and held at arms length from an eye of said observer.

3,846,919
TRANSFORMABLE FOOTWEAR

Milio Milotic, 15, Avenue Montaigne, 94170 Le Perreux, France

Filed Nov. 8, 1973, Ser. No. 413,883
Claims priority, application France, Aug. 21, 1973, 73.30327
Int. Cl. A43b
U.S. Cl. 36—2.5 W **6 Claims**

1. A shoe which is transformable simply by substituting one of its elements, wherein said shoe comprises three independent components constituted by a bottom comprising a wearing sole and a heel, an inner shoe assembly comprising an insole integral with a complete lining, and an outer dressing chosen from a series created for its variety, this outer dressing comprising a visible upper extended by a lower inset part to

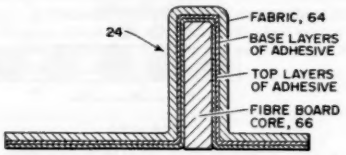


allow it to be fitted onto the inner shoe assembly and wherein dismountable connecting means are provided between the insole and the bottom.

3,846,920
SEWING RIB

Reginald P. Perry, Wellesley, and Nils W. Sjoberg, Lynn, both of Mass., assignors to Prime Manufacturing Company, Lynn, Mass.

Filed Oct. 30, 1973, Ser. No. 411,294
Int. Cl. A43b *13/00*
U.S. Cl. 36—22 A **3 Claims**

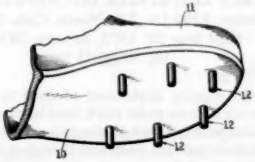


1. Insole sewing rib stock comprising a core, a tape enfolding and adhered to the core and presenting base flanges extending from the core, said flanges being coated on lower surfaces thereof with an adhesive system comprising a first layer and a second layer, said first layer adhered directly on said lower surfaces and comprising a heat-activatable adhesive composition containing a dark filler and said second layer adhered to said first layer comprising a heat-activatable adhesive composition that transmits infrared radiation.

3,846,921
SPIKED SHOE

Kazutoshi Kobayashi, Tokyo, Japan, assignor to Onitsuka Co., Ltd., Kobe City, Japan

Filed May 31, 1973, Ser. No. 365,547
Claims priority, application Japan, June 6, 1972, 47-65978; Dec. 27, 1972, 47-148345
Int. Cl. A43b *23/28*
U.S. Cl. 36—59 R **6 Claims**



1. A spiked shoe comprising a sole and an upper mounted on the sole, the sole having a lower surface, a plurality of spikes extending from the lower surface of the sole, each spike

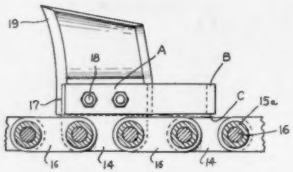
having a longitudinal axis and an effective part which extends between the lower surface of the sole and the lower end of the spike, the effective part of each spike comprising an upper part extending axially downwardly from the lower surface of the sole and a lower part extending axially downwardly from the upper part and formed integrally therewith, each of the upper and lower parts extending parallel to the longitudinal axis of the spike and having a uniform cross section throughout the length thereof, the cross section of the upper part being larger than the cross section of the lower part, the lower end of each lower part having a planar surface crossing the axis of the spike and the lower end of each upper part having a resistance face extending outwardly beyond the lower part for checking unnecessarily deep penetration of the spike into the track.

3,846,922

STABILIZING MEANS FOR CHAIN DITCH DIGGING IMPLEMENT

Steven A. Horton, Rt. 3, Easley, S.C. 29640

Filed Jan. 8, 1973, Ser. No. 322,000
Int. Cl. E02f *5/06*
U.S. Cl. 37—83 **2 Claims**



1. In a ditch digging machine having an endless chain carried about a sprocket with alternate inner and outer links pivoted to each other carrying bracket means attached at a lower portion thereof to a link and projecting thereabove carrying a digging implement adjacent an upper portion thereof, the improvement comprising: a stabilizing element carried adjacent a trailing end of said bracket means, said element including an extension projecting rearwardly of said bracket means and a portion of one link next adjacent said bracket means beyond a pivot point of a succeeding link rearwardly of said one link at least to a medial portion of a next succeeding link, a lower engaging surface carried by said extension which engages a medial portion of said succeeding link, and said stabilizing element being fixedly carried with respect to said bracket and said medial portion to limit relative movement therebetween dividing the force exerted by said stabilizing element between pivot points of said succeeding link when said digging implement engages an obstacle when digging but permitting articulated movement therebetween when passing about said sprocket.

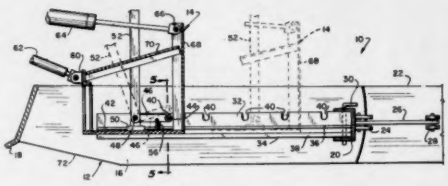
3,846,923

VARIABLY ADJUSTABLE DITCHING IMPLEMENT

Clyde Whittier, 5300 Ln. 7 N, Mosca, Colo. 81146

Filed May 24, 1973, Ser. No. 363,594
Int. Cl. E02f *5/02*
U.S. Cl. 37—98 **6 Claims**

1. A ditch digging implement adapted to be towed by a tractor having a three-point hitch, said implement comprising a main frame having a pair of elongate wings ridigly interconnected, at their forward ends and diverging rearwardly from each other, a hitch frame mounted upon said main frame for sliding movement forwardly and rearwardly along the central longitudinal axis of said V-shaped main frame, releasable locking means for locking said hitch frame to said main frame at selected positions of longitudinal adjustment thereon, first coupling means adjacent the forward end of said hitch frame for coupling said hitch frame to two points of the three-point hitch of said tractor for pivotal movement about a horizontal axis normal to said longitudinal axis, an extensible hydraulic motor adapted to be coupled at one end to the third point of



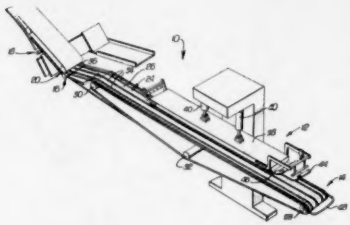
said three-point hitch, and second coupling means for coupling the other end of said motor to said hitch frame whereby said other end is movable with the hitch frame relative to the main frame, actuation of said motor means being operable to pivot said implement about said horizontal axis into a forwardly inclined position when said locking means is locked.

3,846,924

KNITTED T-SHIRT HOT PRESSER AND FOLDER AND METHOD

Carl F. Sjoman, Los Angeles, Calif., assignor to Team Industries, Los Angeles, Calif.

Continuation of Ser. No. 191,448, Oct. 21, 1971, abandoned.
This application Dec. 3, 1973, Ser. No. 421,153
Int. Cl. D06f *61/00, 63/00, 69/00*
U.S. Cl. 38—2 **2 Claims**



1. A method of pressing and folding a knitted T-shirt, including the steps of:

applying heat and pressure at a central zone only of a knitted T-shirt to lock together the fibers of the knitted fabric; and

while the fabric remains heated and the fibers remain locked, folding the T-shirt along fold lines adjacent and extending along opposite edges of the central zone, leaving a pressed portion of the T-shirt exposed to view.

3,846,925

FRAME MEANS

Rido Busse, Napoleonweg 6-8, 7911 Oberelchingen, Germany

Filed Aug. 1, 1972, Ser. No. 276,967
Claims priority, application Germany, Aug. 11, 1971, 2140231; Aug. 11, 1971, 2140232; Jan. 25, 1972, 2203387
Int. Cl. G09f *3/18*
U.S. Cl. 40—16.2 **1 Claim**

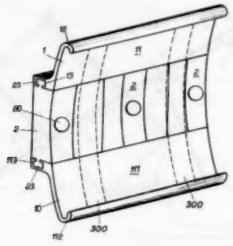
1. A frame adapted to receive, removably, at least one two-dimensional object,

said frame comprising, in combination:

edge supports adapted to receive therein the edges of the

object, said edge supports having end portions and being spaced apart from each other for a distance slightly smaller than the corresponding straight dimension of the object,

a back support for supporting the object when it is placed in position in said frame engaged with relation to said edge supports; said back support having a middle portion lying behind an imaginary connecting straight line between said edge supports, whereby the object placed into



said frame will assume a concave position when positioned abutting against said back support;

securing means operable for securing said middle portion and said end portions together, said securing means comprising groove means and resilient means to be slidably engaged in said groove means; and

said middle portion comprising a plurality of web means spaced apart from each other when said web means are assembled into said frame, said web means forming a rigid structure with said edge supports and said back support.

3,846,926

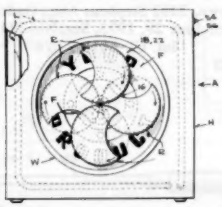
PLANETARY GEAR DRIVEN ROTARY DISPLAY DEVICE

Harry G. Sullivan, 230 S. Boundary St., DeLand, Fla. 32720

Filed Jan. 9, 1974, Ser. No. 432,091

Int. Cl. G09f *11/04*

U.S. Cl. 40—34 **21 Claims**



1. A planetary gear driven rotary display device comprising in combination:

a. a relatively stationary main support shaft with means axially centering it relative to a central viewing area and viewing member, indicia on said viewing area and said viewing member, and a stationary relatively small diameter first sun gear fixed to said shaft;

b. a second sun gear but of compound form and rotatably mounted forwardly adjacent said first sun gear and upon said main support shaft;

c. a rotatable-display-member-support constituted by a rotatable planetary gear carrier mounted for rotation upon said stationary support shaft which passes through a center axis thereof;

d. a plurality of stub shafts fixedly attached to said planetary gear carrier with the respective shaft axes parallel to and uniformly spaced radially from said main support shaft;

e. a like plurality of driven, uniform size planetary gears, and a corresponding like plurality of rotatable display members respectively mounted parallel to said planetary gears with one of each rotatably disposed on each of said plural stub shafts for collective orbital movement around and with said planetary gears in engagement with said rotatable second sun gear; said rotary display members being of predetermined shape so as to progressively collectively cover and uncover at least portions of the central viewing area during operation of the device;

f. a planetary compound output drive gear carried with and upon said planetary gear carrier and freely rotatably disposed on a further stub shaft radially spaced from said main support shaft, said compound output drive gear being of substantially lesser size relative to said planetary gears;

g. said compound planetary output drive gear meshing with both said stationary sun gear and with said second compound rotatable sun gear as mounted for free rotation upon said main support shaft;

h. certain of said planetary gears being axially offset in parallel planes from others; said rotatable compound sun gear having an axially extended hub gear portion so as to intermesh with the axially offset planetary gears, and the respective gears being proportioned so as to uniformly impart thereto a continuous positive rotation of said planetary gears and correspondingly connected display members at a relatively different speed than that of said planetary gear carrier, whereby said respectively rotatable display members are periodically synchronously and cyclically collectively orbitally moved during their individual rotation about their respective individual axes so as to effect said progressive covering and uncovering of the indicia in the central viewing area.

3,846,927

DISPLAY WRITING INSTRUMENT

Hyman Geffen, 1270 E. 100th St., Brooklyn, N.Y. 11236

Filed Aug. 30, 1973, Ser. No. 393,103

Int. Cl. B43k *29/00*

U.S. Cl. 40—334 **7 Claims**

1. A writing instrument comprising an elongated body, and a combination display device and pocket clip carried by said body, said combination display device and pocket clip comprising a plate wider than said body having a display surface, the opposite surface of said plate being secured to said body at a point spaced from an edge of said plate, a portion of said plate overlying but being unsecured to said body, whereby

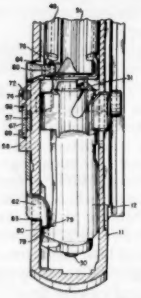
when said body is inserted into a shirt pocket the upper margin of the shirt pocket can be pushed between said body and the unsecured portion of said plate to hold the writing instrument in the pocket and to display the entire display surface of said plate outside the pocket.

3,846,928

BOLT LATCH FOR AUTO LOADING FIREARM

William B. Ruger, Southport, and Harry H. Sefried II, New Haven, both of Conn., assignors to Strum, Ruger & Co., Inc., Southport, Conn.

Filed Aug. 20, 1973, Ser. No. 389,710
Int. Cl. F41c 11/00; F41d 1/00
U.S. Cl. 42—16 6 Claims



1. In an auto-loading firearm having a receiver, a barrel having a chamber secured to the receiver, a bolt mounted for longitudinal travel in the receiver behind the barrel, an auto-loading mechanism connected to the bolt for moving the bolt from a forward closed position to a rearward open position and return when the firearm is fired, a magazine disposed beneath the bolt, said magazine being adapted to contain a plurality of cartridges and having a spring-pressed vertically movable magazine follower that moves the cartridges contained in the magazine upwardly into position to be loaded into the chamber of the barrel, and bolt lock means for locking the bolt in its open position when the magazine is empty and the last cartridge from the magazine has been fired, the improvement in bolt lock means which comprises:

a longitudinally extending bolt lock lever pivotally mounted on the receiver, said bolt lock lever having a magazine follower engaging arm at the forward end thereof and having a bolt stop arm at the rearward end thereof, said forward and rearward ends of said bolt lock lever each being vertically movable between predetermined upper and lower positions when the bolt lock lever is rotated about the pivot thereof,

a bolt lock lever spring that urges the forward end of the pivoted bolt lock lever to its lower position and the rearward end of said bolt lock lever to its upper position,

a bolt stop lug disposed at the rearward end of the bolt in position to be clear of the bolt stop arm of the bolt lock lever when the rearward end of the bolt lock lever is at its upper position and in position to be blocked by the bolt stop arm of the bolt lock lever when the rearward end of the bolt lock lever is at its lower position, and

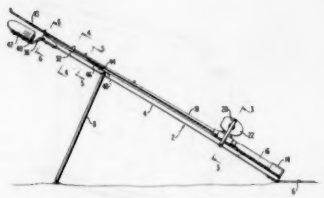
a bolt lock activating surface disposed on the upper end of the spring-pressed magazine follower in position to contact the magazine follower engaging arm of the bolt lock lever when the magazine is empty, said bolt lock activating surface moving the forward end of the pivoted bolt lock lever to its upper position and moving the rearward end of the pivoted bolt lock lever to its lower position when said magazine is empty.

3,846,929

FISHING POLE HOLDER AND SIGNALING DEVICE

Jack C. McBride, Space No. 2, Deck Dr., Suisun City, Calif. 94585

Filed Aug. 17, 1973, Ser. No. 389,182
Int. Cl. A01k 97/12
U.S. Cl. 43—17 7 Claims



1. A fishing rod holder and alarm, comprising

an elongate support member having means thereon for supporting a fishing rod with the tip-end portion of the rod disposed at one end of the support member and the butt-end portion of the rod disposed at the other end thereof,

means on said support member for holding the butt-end portion of the rod,

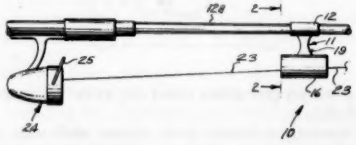
an electrical alarm system including a switch adjacent said one end of said support member, and means on said support member intermediate the ends thereof for adjustably supporting an intermediate portion of said rod at a selected distance away from said support member, whereby selectively to vary the force required to be applied to the tip end thereof to actuate said switch.

3,846,930

APPLICATOR FOR APPLYING A LUBRICANT AND DE-ICER TO A FISHING LINE

Dorian W. Brown, 3262 Stephens Ave., Ogden, Utah 84401

Filed June 28, 1973, Ser. No. 374,621
Int. Cl. A01k 97/16
U.S. Cl. 43—25 5 Claims

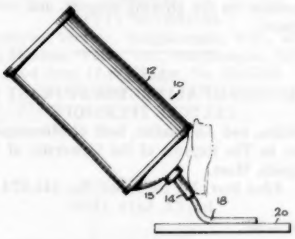


1. An applicator for applying a lubricant and de-icer fluid to fishing lines, comprising a mounting base having a sleeve including a rubber bushing mounted therein for frictionally securing said device to a fishing rod, a hollow double walled sleeve mounted on said base and providing reservoir storage means for said lubricant and de-icer fluid and plug means mounted on said base and said sleeve for enabling said hollow sleeve to be refilled with said fluid, a felt liner mounted within said hollow sleeve and providing a means for absorbing said fluid and applying said fluid to the fishing line, said sleeve having means to permit flow of said liquid to said liner.

3,846,931
APPARATUS AND METHOD FOR PRODUCING FISH LURE OF EXTRUDED FISH BAIT COMPOSITION

Marshall H. Block, 16016 Vose St., Van Nuys, Calif. 91406; Gerald L. Hubbard, 6701 Sunnybrae Ave., Canoga Park, Calif. 91306, and Donald E. Podolor, 3102 Dona Sofia, Studio City, Calif. 91604

Filed Feb. 5, 1973, Ser. No. 329,712
Int. Cl. A01k 85/00
U.S. Cl. 43—42.53 5 Claims

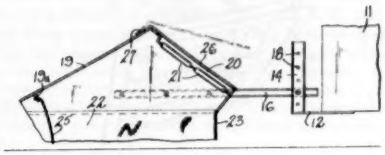


1. Apparatus for producing an extruded wormlike fish lure, comprising a vessel pressurized with a pressurant and having means including a fish bait composition in said vessel and an extrusion nozzle connected to said vessel for extruding from said vessel a fish lure of said composition that is wormlike in length, diameter, flexibility, resiliency, rubberiness, and strength sufficient to permit the lure to be impaled upon a fishhook and immersed in water while maintaining its wormlike form.

3,846,932
VEHICLE MOUNTED INSECT EXTERMINATOR

Walter Bialobrzeski, 92 Grove St., East Berlin, Conn. 06023

Continuation-in-part of Ser. No. 214,328, Dec. 30, 1971, abandoned. This application May 15, 1972, Ser. No. 253,457
Int. Cl. A01m 5/04
U.S. Cl. 43—138 13 Claims



1. A device for exterminating insects comprising an opaque hood-like member having closed sides, a closed forward roof portion and an open button, said member being constructed and arranged to be moved by a vehicle with said open bottom a slight distance above ground growth, said member having an opening therein rearwardly from said roof portion, and insect exterminating means disposed adjacent said opening.

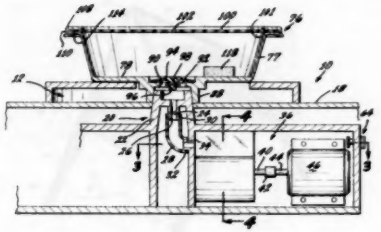
3,846,933
PNEUMATIC TOY STOVE ACCESSORY

Allen D. Hill, Manhattan Beach; Sidney Bass, Los Angeles, and Hubert A. Rich, Westminster, all of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Nov. 19, 1973, Ser. No. 417,025
Int. Cl. A63l 3/52
U.S. Cl. 46—14 6 Claims

1. In combination with a pneumatic stove toy having an air outlet and means for supplying air under pressure to said outlet, a simulated food-cooking device comprising:

a simulated food item including an air inlet and a stretchable diaphragm which is decorated to siumlate uncooked food when in a relaxed condition and cooked food when in a distended condition;



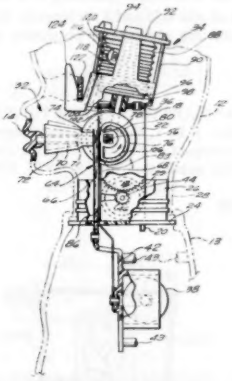
means connecting said air inlet on said simulated food item to said air outlet on said stove toy for supplying air to said simulated food item and distend said diaphragm to simulate a change from uncooked to cooked food; and

aperture means in fluid communication with said simulated food item for bleeding air therefrom.

3,846,934
KISSING DOLL ACTUATED BY PRESSURE APPLIED TO LIPS

Herbert Thorn, Jamaica, N.Y., and Robert E. Davis, North Branford, Conn., assignors to Ideal Toy Corporation, Hollis, N.Y.

Filed Mar. 1, 1973, Ser. No. 337,249
Int. Cl. A63h 3/31
U.S. Cl. 46—232 16 Claims



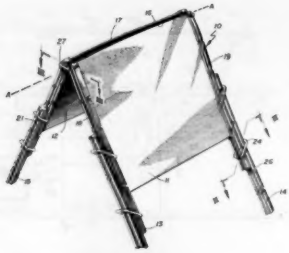
1. A doll comprising a head having a flexible face including a pair of movable lips formed thereon, means mounted within said doll for moving said lips and means mounted within said doll responsive to a slight pressure applied externally to said lips to actuate said lip-moving means for moving said lips from their normal position to an extended puckered position, thereby to simulate a kissing action.

3,846,935

SHRUB PROTECTOR

Ronald W. Wagner, 79a Main St., Morningdale, Mass. 01530

Filed Nov. 16, 1972, Ser. No. 307,161
Int. Cl. A01g 13/00
U.S. Cl. 47—26 1 Claim



1. A shrub protector, comprising:

a. a first plate, having a first side, and two other opposed sides,

b. a second plate having a first side, and two other opposed sides hingedly connected to the first plate, along the first side of each plate,

c. two spaced, parallel legs associated with each plate, and

d. means adjustably connecting each leg to its plate, each plate having a reinforcing strip extending along two opposed sides extending at right angles to said first side, and

f. the legs and reinforcing strips being provided with spaced notches and joined by bails which lock in the notches to hold each leg in an adjusted position relative to its reinforcing strip,

wherein each plate is rectangular,

wherein each reinforcing strip is provided with a rib which slidably engages a groove on a leg,

wherein the plates are hingedly connected by means of a U-shaped element having its ends located in bores in the ends of the reinforcing strips, and

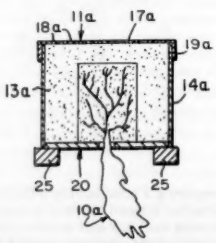
wherein the legs and the reinforcing strips are formed of extruded material of the same cross-sectional size and shape, the said shape consisting of a rectangle having a notch at one side and a rectangular protrusion at the other side, the rectangular protrusion having parallel sides.

3,846,936

METHOD AND APPARATUS FOR TRANSPLANTING

Albert W. Kelley, R.D. 1, Box 28, Creamridge, N.J. 08514

Continuation-in-part of Ser. No. 152,182, June 11, 1971, abandoned. This application Nov. 8, 1972, Ser. No. 304,764
Int. Cl. A01g 9/02
U.S. Cl. 47—58 10 Claims



1. In the method of transplanting a plant from a small diameter sleeve container to a large diameter sleeve container, the steps which comprise: placing a plant having its roots and growing medium contained in a small sleeve in an inverted position on and spaced within the bounds of a generally flat filling support having an opening with the roots and growing medium above the filling support and the stem depending through the filling support opening, placing a large sleeve container about the roots and growing medium with its lower end closed by the filling support, filling the large sleeve container with additional growing medium horizontally and vertically, placing a perforated growing support on the large sleeve container while the plant is inverted, inverting the plant to an upright position on the growing support, and removing the filling support.

3,846,937

PRODUCTION OF ALLERGENS BY PLANT TISSUE CULTURE TECHNIQUE

E. John Staba, and Ali Shafiee, both of Minneapolis, Minn., assignors to The Regents of the University of Minnesota, Minneapolis, Minn.

Filed Mar. 29, 1973, Ser. No. 346,074
Int. Cl. A61k 23/00
U.S. Cl. 47—58 12 Claims

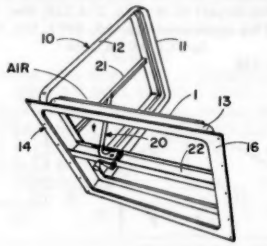
1. A process for the production and isolation of specific ragweed allergens from cultures of short ragweed plants which comprises aseptically growing cells derived from tissue of said plants under tissue growth conditions in a nutrient medium and separating the allergens from said cells.

3,846,938

VENT OPERATOR ASSEMBLY

Donald V. Kelly, 10642 Helendale, Tujunga, Calif. 91042

Filed Nov. 22, 1972, Ser. No. 305,696
Int. Cl. E05f 11/24
U.S. Cl. 49—342 1 Claim



1. A vent assembly comprising

a frame adapted to be installed in an enclosure and defining the opening therein;

a vent cover hinged to one side of said frame;

an operator including an arm engaging said vent cover for opening, closing and securing said vent cover in different positions;

said operator including a brace member including two parallel extending surfaces joined by a perpendicular connecting web portion;

means securing said brace member to said frame with said two parallel extending surfaces generally normal to the direction of opening of said vent cover;

said arm of said operator including one end rotatably secured to the web portion of said brace member and including a sector gear portion centered about the axis of rotation of the arm;

a helical screw journaled between the parallel extending surfaces of said brace member and in operable engagement with said sector gear portion;

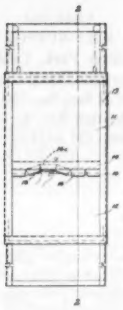
said operator also including means for turning said helical screw to actuate said arm and open and close said vent cover;

and wherein said brace member includes elongated ribs in said paralell extending surfaces integral and extending parallel to and spaced from said web portion and including flexible cover means dimensional to enclose said helical screw and sector gear portion of said arm and in engagement with said elongated ribs.

3,846,939
SAFETY ASTRAGAL

Herbert Schuyler Weaver, Poughkeepsie, N.Y., assignor to Sedgwick Machine Works, Inc., Poughkeepsie, N.Y.

Filed June 12, 1973, Ser. No. 369,224
Int. Cl. E06b *3/44*; **E05f** *7/00*
U.S. Cl. 49—370 **3 Claims**



1. An astragal for closing the junction between panel members movable in a common plane between an open and a closed position including, in combination, first and second panel members having adjacent junction edges, first and second open-ended channel members, said first channel member being fixedly secured at its base to the junction edge of the first panel member, the second channel member being comprised of a plurality of articulated links, each of the said links being freely supported by and protruding from the open end of the first channel member and being receivable within the first channel member when movement in a direction toward the same is imparted thereto, the junction edge and a portion of the second panel being receivable within the second channel member when the members are moved to a closed position.

3,846,940
DOUBLE DISC GRINDER

Elman R. Dunn, Roscoe, Ill., assignor to Litton Industries, Inc., Beverly Hills, Calif.

Filed Mar. 8, 1973, Ser. No. 339,126
Int. Cl. B24b *7/00*, *9/00*
U.S. Cl. 51—118 **5 Claims**

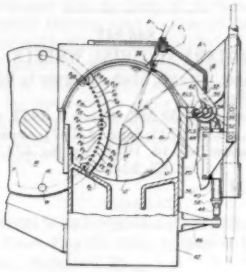
1. A double disc grinder comprising

abrasive disc means including a pair of substantially coaxial discs each having a central bore therein, said abrasive discs being adapted to be rotated about the axes thereof, means for displacing a workpiece along a predetermined arcuate feed path across the abrading surfaces of said discs from an entry position proximate the outer periphery of said discs, past a midpoint whereat the workpiece partially overlays said central bores to an exit point proximate the outer periphery of said discs,

said discs being selectively canted so that the separation therebetween along said feed path will gradually decrease from said entry position to said exit position and so that the peripheral portions of said discs proximate said exit point will be substantially parallel, and

dressing means, and

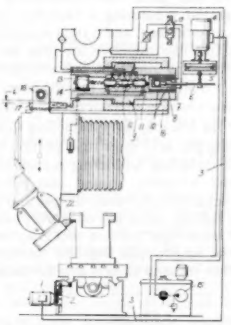
means for displacing said dressing means along a path extending from the outer to the inner periphery of said discs, said path being selectively defined so that a predetermined convex curvature will be established on said abrasive discs along said dressing means path whereby approximately one-third of the total stock removed from the workpiece will be removed and the separation of said discs will be substantially uniformly decreasing at a relatively slow rate during the last one-half of said feed path.



3,846,941
CONTROL FOR A LIFTING MECHANISM FOR A HYDRAULIC COPYING DEVICE ON MACHINE TOOLS

Heinz Gerner, Coburg, and Rudolf Merkel, Scheuerfeld, both of Germany, assignors to Werkzeugmaschinenfabrik Adolf Waldrich Coburg, Coburg, Bavaria, Germany

Filed July 20, 1972, Ser. No. 273,624
Claims priority, application Germany, July 22, 1971, 7128109
Int. Cl. B24b *7/02*
U.S. Cl. 51—165.89 **6 Claims**



1. A lifting mechanism for use in a hydraulic copying device for machine tools, having a rectilineal sliding tracer scanning the outline of a template and a control piston connected with the tracer which controls the supply of pressure medium from a pump to the working piston effecting the adjusting movement of the tool, the improvement comprising:

means defining a cylinder supported for axial slidable movement in a direction parallel to the movement of said tracer, said tracer being axially slidably supported for movement on said cylinder means;

means defining a pair of axially spaced stops adapted to limit the relative sliding movement between said slidable cylinder means and said tracer;

means defining a control piston engaging said cylinder means; and

operating means for selectively controlling the relative sliding movement between said cylinder means and said tracer to the limits defined by said stop means.

3,846,942

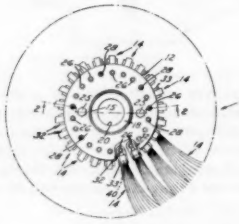
ROTARY FINISHING WHEELS

James A. Belanger, Livonia, Mich., assignor to Belanger, Inc., Northville, Mich.

Division of Ser. No. 339,352, March 8, 1972, which is a division of Ser. No. 155,733, June 23, 1971, abandoned. This application Dec. 14, 1973, Ser. No. 424,777

Int. Cl. B24b *9/02*

U.S. Cl. 51—334 **18 Claims**



1. A rotary finishing wheel comprising a rotatable hub structure having an axis and a series of circumferentially spaced and radially extending pack units carried by said hub structure, said hub structure comprising a pair of axially spaced apart flanges arranged in parallel relationship and which extend radially outwardly from said axis, means for maintaining said flanges in said axially spaced relationship, and a circumferential series of elongated mounting pins carried by said flanges adjacent the outer periphery thereof for mounting said pack units, one mounting pin for each of said pack units, each of said pack units comprising a flap-like member of fill material presenting a radially outer portion adapted to engage a workpiece, and a rigid mounting member distinct from said flap-like member for thus mounting the latter on the corresponding pin of the hub structure, said rigid mounting member providing a single radially inner and axially extending rigid portion having an axial aperture of at least part cylindrical outline for telescopingly mounting said pack unit on the corresponding pin, said inner rigid portion surrounding said axial aperture including restricting means circumferentially extending and wrapping around said pin to prevent undesirable radial separation between the pin and said mounting member, and a radially outer and outwardly extending arm formation on said inner rigid portion and coextensive therewith in overall axial length, said flap-like member having a radially inner portion secured to said arm formation.

3,846,943

PREFABRICATED SHELTER STRUCTURE

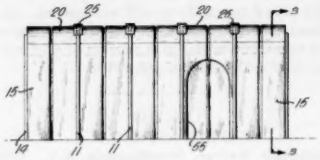
Joseph Wagner, 97 Du Crochet Ave., Laval des Rapides, Quebec, Canada

Filed Oct. 16, 1973, Ser. No. 406,897

Int. Cl. E04h *1/12*; **E04b** *1/32*

U.S. Cl. 52—23 **10 Claims**

1. A prefabricated shelter structure comprising at least two pairs of spaced apart elongated opposed support ribs secured at the lower end thereof, a preformed side panel secured between opposed support ribs from adjacent pairs of support ribs, a preformed top panel between said at least two pairs of support ribs and secured above and bridging opposed side panels, a first adjustable connection member attached near the upper end of said opposed ribs and extending therebetween, a second adjustable connection member secured near



the upper end of a respective one of said ribs and extending downwardly outwards of said structure for connection to an anchor means whereby to retain said ribs in position.

3,846,944

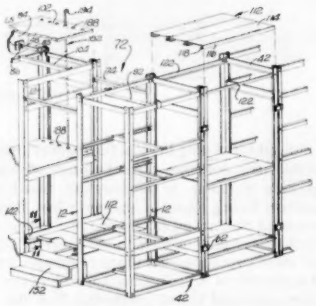
STRUCTURAL SELF-SUPPORTING SYSTEM

Harry Lambert, Monterey Park, Calif., assignor to Barton-King Systems Corporation, Monrovia, Calif.

Continuation-in-part of Ser. No. 100,321, Dec. 21, 1970, abandoned. This application Nov. 6, 1972, Ser. No. 304,188

Int. Cl. A47f *5/10*

U.S. Cl. 52—758 R **11 Claims**



1. A structural self-supporting system, comprising:

a plurality of axially-extending upright members arranged to form a generally box-like structure, each of said upright members having an L-shaped cross-sectional configuration defining a first section, and a second section formed in a plane generally perpendicular to said first section;

a row of spaced openings in each section extending axially thereof, each of said openings comprising an enlarged central portion and a reduced portion contiguous therewith;

means for interconnecting said uprights and completing said box-like structure, including elongated support members each having a surface parallel to one of said upright sections and an axis generally perpendicular to the axis of said openings;

at least one headed projection extending from said surface adjacent each end of a support member, insertion of said headed projections on one of said support members into openings of spaced-apart upright members providing a rigid interconnection between the support member and said upright members;

said interconnecting means including a plurality of generally horizontally-positioned, parallel pairs of said support members completing said box-like structure; and

strengthening means interconnecting a parallel pair of support members for preventing said support members from

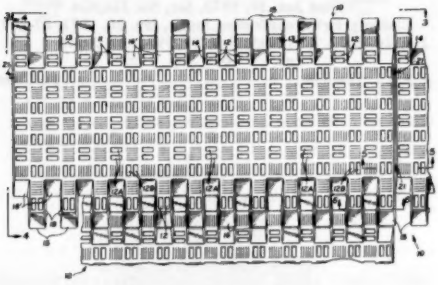
rotating, including a tie strap whose central portion extends between said parallel support members with an L-shaped section at each end positioned around one of said parallel support members in rotation preventing engagement therewith.

3,846,945

DUCKBOARD FATIGUE RELIEF MAT

Michael A. Roby, Winchester, Va., assignor to Rubbermaid Commercial Products Inc., Wooster, Ohio

Filed Oct. 2, 1972, Ser. No. 294,212
Int. Cl. E04c *1/10*
U.S. Cl. 52—177 **3 Claims**



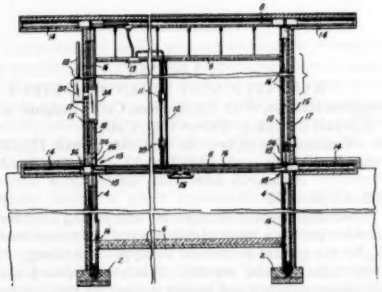
1. A resilient duckboard fatigue relief mat module having a network of intersecting longitudinal and lateral major floor-engaging ribs on its underside, an upper wearing surface having openings therein, and a plurality of tongues projecting laterally from opposite sides and each having downwardly inclined top walls and floor-engaging side walls, said side walls having projections and recesses for interlocking connection with projections and recesses on the side walls of like tongues of adjoining like modules, and skid resistant strips attached to certain of said major ribs.

3,846,946

PRECAST CONCRETE BUILDING CONSTRUCTION

Wayne R. Sandstrom, P.O. Box 1993, Fairbanks, Alaska 99707, and Raymond C. Keturi, 129 Kantishna Way, Fairbanks, Alaska 99701

Filed Nov. 20, 1973, Ser. No. 417,484
Int. Cl. E04b *5/48;* **E04c** *2/52*
U.S. Cl. 52—221 **10 Claims**



1. In a construction wherein precast and stressed concrete slabs are assembled to define a structure, the improvement comprising:

at least one horizontal slab having a plurality of spaced, parallel, generally cylindrical openings extending therethrough from one edge thereof to an opposed edge and generally rectangular integral beam members extending from at least one of said edges between said openings and being of a length greater than the thickness of said slab; and

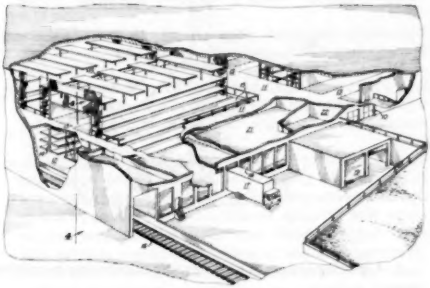
a vertical slab, of the same construction as said horizontal slab, arranged with the ends of the beams on said one edge thereof abutting edge portions of the corresponding beams of said horizontal slab to define an inside corner of said structure, the spaces between said beams, adjacent said edges, thereby being accessible from said inside corner for connecting a utility service component in an opening in one of said slabs to a corresponding utility service component in an opening of the other slab, after said structure is erected.

3,846,947

COMBINATION WAREHOUSE-RETAIL SALES FACILITY

Thomas W. Short, Phoenix, Ariz., assignor to Levitz Furniture Corporation, Pottstown, Pa.

Filed Nov. 19, 1973, Ser. No. 417,033
Int. Cl. E04h *3/02*
U.S. Cl. 52—236 **1 Claim**



1. In a combination furniture warehouse - retail sales facility specially adapted to physically inform prospective retail customers that they are purchasing merchandise from a warehouse facility, said facility having

a plurality of elongate parallel warehouse rack structures spaced laterally to provide warehouse access aisles on the floor of said facility for movement of furniture-handling equipment,

means defining continuous elongate retail showroom areas on the floor of said facility enclosed within the lower portions of each of said warehouse rack structures,

a cross-aisle extending upwardly from the floor of said facility and at right angles to said warehouse rack structures, providing communication for prospective customers between said retail showroom areas and providing communication for furniture-handling equipment between said warehouse access aisles, and

a customer entrance door in an outer wall of said facility communicating with said cross-aisle,

the improvement whereby customers and furniture-handling equipment are physically separated to avoid the possibility of injury of customers by the moving equipment, said improvement comprising:

a. side wall, ceiling and floor means carried in said warehouse rack structures defining continuous elongate retail showroom enclosures, the floors of which are spaced vertically above the floors of said warehouse access aisles;

b. means forming a continuous mezzanine in said cross-aisle extending at right angles to said retail showroom enclosures and across said warehouse access aisles, providing communication between said enclosures for customers;

c. a plurality of vertically spaced warehouse storage floors located below said enclosures, the warehouse storage spaces between said floors opening onto and being accessible from the warehouse access aisles and said cross-aisle;

d. outer walls and roof means forming a building enclosing said warehouse rack structures, said warehouse access aisles, said warehouse storage spaces and said cross-aisle; and

e. means defining a customer entrance door in one of said outer walls communicating with said mezzanine.

3,846,948

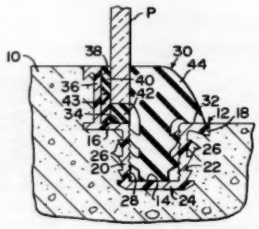
GLAZING SYSTEM

John A. Dallen, Port Clinton, Ohio, assignor to The Standard Products Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 831,498, June 9, 1969, abandoned. This application Nov. 16, 1970, Ser. No. 89,954

Int. Cl. E04b *1/62*

U.S. Cl. 52—400 **8 Claims**



1. A glazing system for an opening comprising in combination:

a. a first generally narrow surface coplanar with and surrounding said opening;

b. a second surface surrounding said opening and perpendicular to said opening adjacent to said first surface;

c. a channel in said second surface and co-extensive therewith spaced from said first surface and open towards said opening;

d. sealing means adapted to be positioned between a panel for closing said opening and said first surface; and,

e. an elongated elastomeric stop member including first and second portions, said first portion being adapted to extend longitudinally into said channel, said second portion including a first sealing surface extending upwardly and inwardly with respect to said first portion toward said panel and terminating in a first outermost leading edge, said second portion further including a second sealing surface extending outwardly and downwardly with respect to said first portion toward the side of said channel remote from said panel, (1) an outer portion only of said first sealing surface being adapted to sealingly engage said panel on the panel surface opposite said sealing means, (2) an outer portion only of said second sealing surface being adapted to sealingly engage said second surface on the side of said channel remote from said first surface, (3) said second portion of said stop member being displaceable relative to said first portion thereof about a longitudinally extending axis disposed in said stop member vertically below said outer portion of said first sealing surface, whereby upon insertion of said first portion of said stop member into said channel, said outer portion only of said second sealing surface engages said second surface to displace said second portion of said stop member about said axis for said outer portion only of said first sealing surface to engage said panel surface, (4) and the remaining portions of said first and second sealing surfaces being spaced respectively from said panel surface and second surface upon insertion of said first portion of said stop member into said channel.

3,846,949

SOUND INSULATING BLOCK

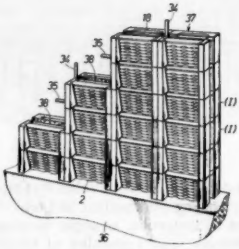
Isao Okawa, Tokyo, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Jan. 26, 1973, Ser. No. 326,826

Claims priority, application Japan, Jan. 26, 1972, 47-9691; Jan. 26, 1972, 47-11045; Feb. 29, 1972, 47-20940

Int. Cl. E04b *1/84, 17/00*

U.S. Cl. 52—438 **10 Claims**



1. A sound-insulating building block comprising:

a. a thick walled structural support member of sound-insulating material having a main wall and two side walls defining a compartment with three open sides;

b. a thin walled panel member having a main side and upper and lower sides and inserted in and cooperating with said support member to enclose said compartment, said main side having a plurality of apertures therein to permit the passage of incident sound waves into said compartment; and

c. a partition member of sound-absorbing material spanning the upper and lower sides of said panel member within said compartment and defining respective air spaces between its opposite surfaces and the main side of said panel member and the main wall of said support member.

3,846,950

HYDRAULICALLY EXTENSIBLE STRUT

Siegfried Hansen, West Los Angeles, Calif., assignor to Hughes Aircraft Company, Culver City, Calif.

Continuation of Ser. No. 235,740, March 17, 1972, abandoned. This application June 11, 1973, Ser. No. 368,910

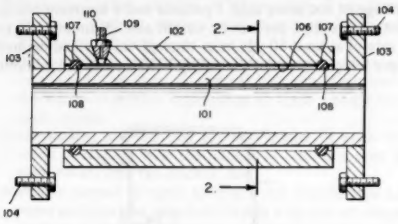
Int. Cl. E04c *3/32*; **G04b** *17/20*

U.S. Cl. 50—632 **6 Claims**

1. An adjustable strut assembly comprising an inner tubular member having a longitudinal axis and a constant outer radius R_o for the greater portion of its length therealong;

an outer tubular member coaxially disposed about said inner member and having a constant inner radius R_i for the greater portion of its length in slip-fit dimensional relationship with said inner tube outer radius, said radius R_i not exceeding said radius R_o by more than approximately 0.005 inch;

hermetic sealing means disposed between opposing portions of said inner member and said outer member at longitudinally spaced locations along said constant radius portions



for providing in conjunction with said portions a thin tubular fluid-tight space; and

means for controllably introducing pressurized fluid into said tubular space.

3,846,951

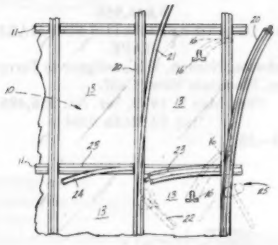
ON SITE METHOD OF ERECTING A WALL STRUCTURE AND A WEATHER GASKET JOINT

David Paull, Big Rapids, Mich., assignor to Swiss Aluminium Ltd., Chippis, Switzerland

Filed Mar. 21, 1973, Ser. No. 343,546

Int. Cl. E04g *21/00*; E04b *2/88*

U.S. Cl. 52—741 **5 Claims**



1. In the method of closing an open framework of interconnecting longitudinal and vertical support members to form a wall by inserting spaced closure panels, retaining and sealing said panels by driving an elongated, deformable gasket into interlocking relationship with the support members, said elongated gasket closing joints between adjacent panels, the improvement comprising the steps of:

providing a plurality of elongated, one-piece, deformable gaskets having a given cross-sectional configuration, dividing at least one of said elongated gaskets into a plurality of short, segmental gaskets, inserting said closure panels, retaining said closure panels temporarily by driving said segmental gaskets into interlocking relationship with the support members at spaced intervals within said joints, thereafter progressively inserting and driving said elongated gaskets into said joints while progressively removing said segmental gaskets whereby said panels are retained and sealed permanently.

3,846,952

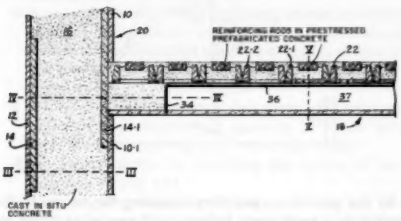
METHOD OF ON SITE BUILDING

Marinus De Winter, P.O. Box 4364, Pretoria, South Africa

Filed June 27, 1972, Ser. No. 266,736

Int. Cl. E04b *5/19*

U.S. Cl. 52—743 **3 Claims**



1. A method of on-site building, which comprises the steps of

providing at least one open-topped supporting member having upstanding sides and a hollow interior between said sides;

providing at least one transportable preformed, prestressed channel-shaped body, comprising a soffit and channel sides defining a space therebetween;

partitioning between and along said channel sides at a predetermined distance from the end of the soffit forming a hollow enclosure with the soffit and sides of the channel-shaped body;

positioning said transportable preformed prestressed channel-shaped body with the soffit resting directly on an upstanding side of said open-topped supporting member; at least partially filling continuous space of said open-topped supporting member and channel-shaped body with settable cementitious material and a transportable reinforced cementitious load-bearing element, the transportable reinforced cementitious load-bearing element being placed at least partly within the channel of the channel-shaped body and being at least partially surrounded with the settable cementitious material;

and permitting the settable cementitious material to set, thereby bonding the said supporting member, the preformed, prestressed channel-shaped body and the transportable reinforced cementitious load-bearing element together with a continuous mass of set cementitious material while leaving an air space below the partitioning on the side which cannot be reached by the settable cementitious material.

3,846,953

BEAMS FOR HYPERBOLIC PARABOLOID ROOFS

Paul T. Hodess, Cambridge, Mass., assignor to Creative Building Systems, Melrose, Mass.

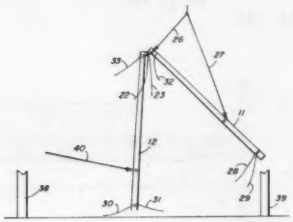
Filed Aug. 2, 1973, Ser. No. 384,934

Int. Cl. E04g *21/00*

U.S. Cl. 52—745 **1 Claim**

1. A method for erecting roof beams for a hyperbolic paraboloid roof or the like comprising the steps of attaching the ends of each pair of opposing beams with hinge means, attaching guy wires to the hinge means, and placing the pair of hinged beams in the desired position by first lifting one beam to the required angle and position while the second beam hangs loose, then lifting said second beam to the required

angle and position, and then placing both beams on a suitably prepared abutment, the hinge portion being temporarily stabi-



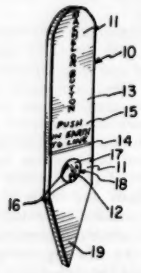
lized by the guy wires, and then attaching the beams to the abutments in a permanent fashion; said guy wires being removed after the structure has been permanently stabilized.

3,846,954

SELF-STARTING PLANT MARKER AND METHODS AND APPARATUS FOR MAKING SAME

Edward F. Meyers, Oyster Bay, N.Y., assignor to Enviro-Gro, Inc., Hauppage, N.Y.

Continuation-in-part of Ser. Nos. 256,365, May 24, 1972, abandoned, and Ser. No. 297,202, Oct. 13, 1972, abandoned.
This application July 27, 1973, Ser. No. 383,154
Int. Cl. B65b *1/16, 61/02*
U.S. Cl. 53—14 **12 Claims**



1. A method of manufacturing self-starting plant markers comprising the steps of:

a. supplying a series of wooden sticks;
b. branding said sticks to provide index means thereon;
c. forming an aperture in each of said sticks;
d. depositing at least one seed in said aperture;
e. maintaining a flowable supply of water soluble vehicle means at a temperature less than 125°F;
f. injecting said flowable vehicle means into said aperture to fill the same; and
g. chilling said vehicle means to a solid, non-flowable state, thereby securing said seed within said aperture.

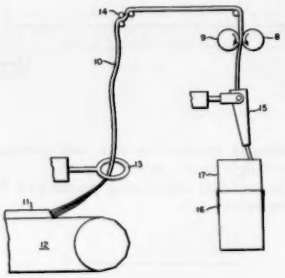
3,846,955

PROCESS FOR PACKAGING ACRYLIC FIBERS

Weat Carl Mattis, Camden, S.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Apr. 8, 1974, Ser. No. 458,462
Int. Cl. B65b *1/24*
U.S. Cl. 53—24 **7 Claims**

1. Process for preparing a package of tow of acrylic fiber in a flat-sided paperboard container comprising: providing a free standing flat-sided paperboard container having the dimensions of the package to be prepared, said container having an opening at the top; providing an extending member on said top temporarily extending the height of said container; heating a tow consisting essentially of acrylic fibers to a temperature not exceeding 160° C. to provide a tow of fibers having a shrinkage of not more than 3 percent and a moisture content of not more than 2 percent by weight and advancing said tow at a rate of at least 60 yds./min. through said extending member at a temperature not exceeding 125° C., and at a minimum



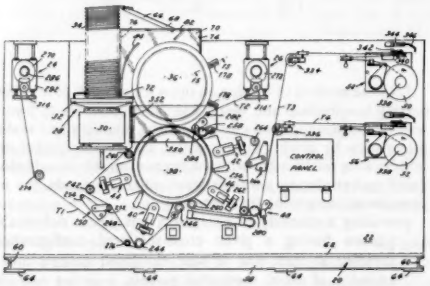
temperature of at least 65° C. when the heating of said tow is carried out in an atmosphere having a water vapor content of 40 percent or more by volume, and of at least about 75° C. when the heating of said tow is carried out in an atmosphere having a water vapor content of 20 percent to 40 percent by volume; compressing said deposited tow into the container to a density of at least 20 lbs./ft.^{3} by pressure applied substantially uniformly across the cross-section of the container defined by the opening, removing the extending member, and closing the container.

3,846,956

METHOD OF AND APPARATUS FOR MAKING SEED TAPE

Carl W. Johnson, Neenah, Wis., assignor to Ferry-Morse Seed Company, Mountain View, Calif.

Filed May 2, 1973, Ser. No. 356,485
Int. Cl. B65b *9/04*
U.S. Cl. 53—28 **19 Claims**



1. A method of manufacturing a seed tape comprising:

moving a first elongate strip of water soluble tape at a constant speed,

forming a series of uniformly longitudinally spaced apart pockets in the moving strip of tape,

moving at the speed of said strip of tape a series of recesses, which are sized to only receive a single seed and are longitudinally spaced apart corresponding to said pocket spacing, in a recyling path from a point remote from said tape into conjunctive recess-to-pocket registration therewith,

inducing a partial vacuum at the bottom of each recess during movement between said point and the recess-to-pocket registration,

spilling a continuous stream of free falling seeds onto said recesses during their movement between said point and the recess-to-pocket registration to catch a single seed in each recess,

discontinuing the induced partial vacuum of each recess when in registry with the pocket to release a seed from each recess into the pocket, and

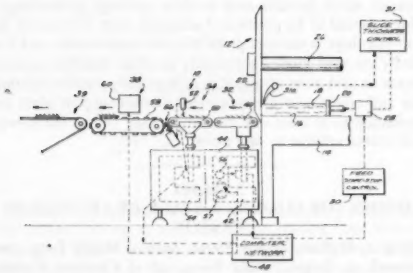
moving a second elongate strip of water soluble tape at the same speed as and into conjunction with and covering the pockets in the first strip of tape following deposit of each seed in a pocket and sealing the strips of tape together around each pocket.

3,846,957

APPARATUS FOR WEIGHING AND SEGREGATING SLICED BACON FROM A SLICING MACHINE

William J. Divan, Centerport, N.Y., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,087
Int. Cl. B26d *4/56, 4/24, 5/00*
U.S. Cl. 53—59 W **20 Claims**



1. The combination of:

a. a slicing machine having:

a slicing blade;

feed mechanism for feeding products to be sliced into the blade;

first control means for determining the rate of advance of said feeding mechanism towards said slicing blade and, consequently, the sliced thickness, said first control means including sensing levers for sensing the cross-sectional size of the product to be sliced whereupon as the cross-sectional size decreases, the rate of advance of the feeding mechanism increases to increase slice thickness and as the cross-sectional size of the product to be sliced increases, the rate of advance of the feeding mechanism is decreased to thereby decrease slice thickness whereupon a more uniform number of slices of the product to be sliced in each segregated measured quantity is obtained; and

b. apparatus for weighing the sliced products coming from the machine and separating them into segregated weighed quantities comprising:

receiving and conveying means for receiving the sliced products from the slicing machine;

second control means operatively connected to said feeding mechanism for interrupting the operation of the feeding mechanism for a sufficient period of time for the receiving and conveying means to operate to convey the sliced products away;

weighing means operatively connected to the receiving and conveying means for causing the operation of the second control means when a predetermined weight of sliced product has been discharged onto the receiving and conveying means to interrupt the operation of the feeding mechanism;

said second control means including means automatically initiating the operation of the feeding mechanism after it has been interrupted for a sufficient period of time for the predetermined weight of the sliced products to be conveyed away;

a second receiving and conveying means for receiving the segregated, predetermined quantity of sliced products from the first receiving and conveying means;

third control means for adjusting the setting of the first weighing means; and

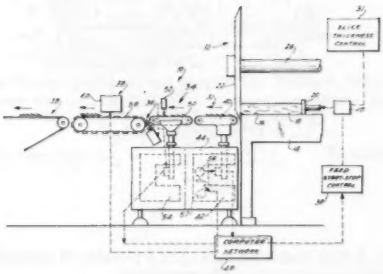
second weighing means operatively connected to the second receiving and conveying means for causing the operation of the third control means when a predetermined quantity of the sliced products has been weighed by the second receiving and conveying means, said second weighing means feeding back signals to the first weighing means corresponding to the weight of the predetermined quantity of the sliced products on the second receiving and conveying means over and below the prescribed weight to thereby automatically correct the weight of the predetermined quantity of the sliced products weighed on the first receiving and conveying means proportionately to the departure from the prescribed weight as registered by the second weighing means.

3,846,958

APPARATUS FOR WEIGHING AND SEGREGATING SLICED BACON FROM A SLICING MACHINE

William J. Divan, Centerport, N.Y., assignor to Cashin Systems Corp., Williston Park, N.Y.

Filed Oct. 10, 1973, Ser. No. 405,100
Int. Cl. B26d *4/56, 4/24, 5/00*
U.S. Cl. 53—59 W **15 Claims**



1. The combination with a slicing machine having a slicing blade and feeding mechanism for feeding products to be sliced into the blade, of apparatus for weighing the slice products coming from the machine and separating them into segregated weighed quantities comprising:

receiving and conveying means for receiving the sliced products from the slicing machine;

control means operatively connected to said feeding mechanism for interrupting the operation of the feeding mechanism for a sufficient period of time for the receiving and conveying means to operate to convey the sliced products away;

weighing means operatively connected to the receiving and conveying means for causing the operation of the control means when a predetermined weight of sliced product has been discharged onto the receiving and conveying means to interrupt the operation of the feeding mechanism;

said control means including means automatically initiating the operation of the feeding mechanism after it has been interrupted for a sufficient period of time for the predetermined weight of the sliced products to be conveyed away;

a second receiving and conveying means for receiving the segregated, predetermined quantity of sliced products from the first receiving and conveying means;

second control means for adjusting the setting of the first weighing means; and

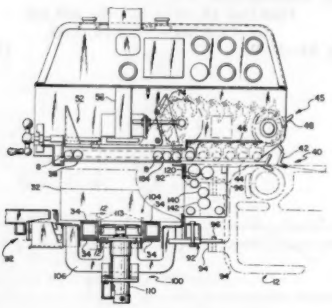
second weighing means operatively connected to the second receiving and conveying means for causing the operation of the second control means when a predetermined quantity of the sliced products has been weighed by the second receiving and conveying means, said second weighing means feeding back signals to the first weighing means corresponding to the weight of the predetermined quantity of the sliced products on the second receiving and conveying means over and below the prescribed weight to thereby automatically correct the weight of the predetermined quantity of the sliced products weighed on the first receiving and conveying means proportionately to the departure from the prescribed weight as registered by the second weighing means.

3,846,959

BULK-LOADING APPARATUS

Paul F. Good, Lutherville, Md., assignor to Speedco, Inc., Baltimore, Md.

Filed May 30, 1973, Ser. No. 365,233
Int. Cl. B65b *57/10, 35/44*
U.S. Cl. 53—61 **21 Claims**



1. A bulk loader for packaging a plurality of sausages in a container having side walls comprising:

a. support means for supporting a group of sausages;

b. container support means, positioned below said support means, for supporting the container;

c. feeder means for advancing sausages onto said support means;

d. stripping means mounted for stripping movement relative to said support means for intermittently moving a group of sausages from said support means into the container;

e. shearing means for cutting a web of paper into discrete lengths;

f. supply means for feeding a web of paper to the shearing means; and

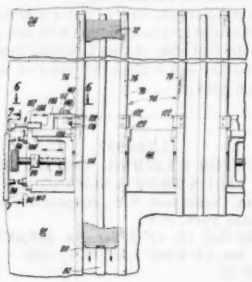
g. paper outfeed means for feeding a discrete length of paper from said shearing means along each group of sausages deposited on the support means to permit simultaneous movement of the discrete length of paper and the group of sausages into the container by said stripping means.

3,846,960

STRIP MATERIAL PACKING APPARATUS

Frederick F. Forthmann, Jr., 688 Pascack Rd., Washington Township, Bergen County, N.J. 07675

Division of Ser. No. 258,735, June 1, 1972, Pat. No. 3,804,266.
This application July 31, 1973, Ser. No. 384,222
Int. Cl. B65b *5/10, 35/40*
U.S. Cl. 53—163 **5 Claims**



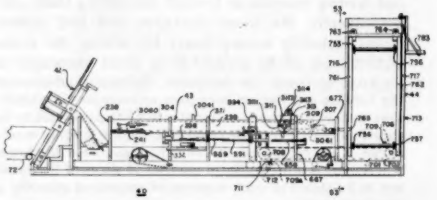
1. A packing device for packing individual lengths of strip material which are delivered to drop openings, comprising a guide adapted to be positioned alongside one or more of the drop openings, a support plate movable backwardly and forwardly on said guide, a plurality of strip material packing chutes on said plate arranged in substantially parallel relationship and adjustment means carried on said support plate and connected to at least one of said packing chutes for moving said chutes relative to said plate.

3,846,961

MACHINE FOR LOADING A STACK OF ARTICLES IN A CARTON

Edwin A. Molitor; Walter Elsten, both of Miami Twsp., and Enoch A. Sergent, Ohio Twsp., all of Clermont County, Ohio, assignors to Multifold-International, Inc., Milford, Ohio

Filed July 2, 1973, Ser. No. 375,661
Int. Cl. B65b *43/26, 39/12*
U.S. Cl. 53—250 **10 Claims**



1. A machine for loading a stack of articles in a carton which comprises a pivotally mounted stack turning frame, stack guiding means extending outwardly of the axis of the stack turning frame, means for advancing the stack in upright position into the stack turning frame adjacent the stack guiding means when the stack guiding means is upright, a stack

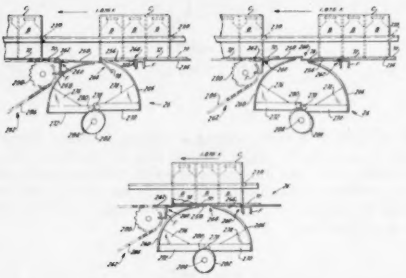
advancing head mounted on the stack turning frame and engageable with the underside of the stack, stack holding flap means mounted on the stack guiding means remote from the axis of the stack turning frame, means for advancing the head toward the flap means to hold the stack against the flap means, means for swinging the stack turning frame from the position in which the stack guiding means is upright to a position in which the stack guiding means is horizontal, tracks opposite the stack turning frame, means for advancing an erect carton along the tracks to a loading station at which the interior of the carton is aligned with the stack guiding means in horizontal position, means for withdrawing the flap means from the stack and for further advancing the head to advance the stack into the carton, and means for closing flaps of the carton to hold the stack in the carton.

3,846,962

FLAP CLOSING MECHANISM FOR HIGH SPEED AUTOMATIC CASING MACHINE

Anthony T. Rossi, Bradenton, Fla.

Division of Ser. No. 183,471, Sept. 24, 1971, Pat. No. 3,805,484. This application Feb. 11, 1974, Ser. No. 441,041
Int. Cl. B65b *7/20, 7/26*
U.S. Cl. 53—374 **6 Claims**



1. For use in a automatic carton packing operation, in which filled cartons having at least the botton leading flaps thereof in the open position are conveyed past a leading flap closing station, a leading flap closing mechanism comprising support means at said leading flap closing station, said support means having an opening, means for conveying said cartons along said support means past said opening, a pair of spaced reciprocating members in said opening defining a slot therebetween and means for reciprocating said spaced members to receive said front flap extending outwardly ahead of said carton in said slot in the direction of carton movement and to thereafter engage said front flap and pivot same inwardly toward the underside of said carton, said front flap leaving said slot in the closed position.

3,846,963

GRASS CLIPPING COMPACTER ATTACHMENT FOR LAWNMOWERS

Richard A. Pedigo, 2900 Fairfax St., Denver, Colo. 80207

Filed Oct. 4, 1972, Ser. No. 294,815
Int. Cl. A01d *73/00*
U.S. Cl. 56—13.3 **4 Claims**

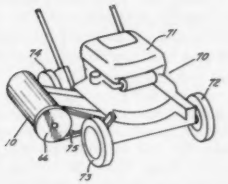
1. A grass clipping compressor apparatus for use with a power lawnmower having a cutting device driven by a power means for severing lawn clippings, said compressor apparatus comprising:

a. a hollow, generally uniform diameter tubular body mounted on said lawnmower and having a generally closed end and an opposite full diameter open end, said body further having an elongated side opening positioned longitudinally along a portion of said body and near said closed end, said body side opening being arranged to receive said grass clippings from said mower;

b. a rotatable shaft means mounted in said tubular body with one end extending centrally through said body closed end;

c. a spiral conveyor means extending through said body and rotatably mounted on said shaft means, said conveyor means terminating adjacent said body open end and including at least a double flight portion adjacent said open end;

d. a stationary cutting means mounted in the open end of said body and arranged in contact with the end of said conveyor means, said stationary cutting means includes



a plurality of radially extending blades and centrally located bearing means for supporting the end of said rotatable shaft means;

e. a rotary cutting means mounted for rotation on the end of said shaft means downstream of said stationary cutting means and including a plurality of radially extending blades in rotative contact with said stationary cutting means;

f. an extruder plate having a plurality of holes mounted in said body open end adjacent to and downstream of said rotary cutting means; and

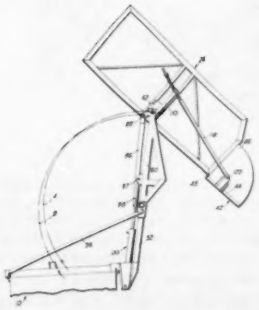
g. means for drivingly connecting the extended end of said shaft means with said lawnmower drive means whereby said apparatus compresses and forms said grass clippings into dense pellets having considerably less volume than the loose clippings.

3,846,964

PEANUT HARVESTING MACHINE

George Victor Frushour, and Marvin Lee Nafziger, both of Albany, Ga., assignors to Lilliston Corporation, Albany, Ga.

Filed Feb. 27, 1973, Ser. No. 336,202
Int. Cl. A01d *41/10*
U.S. Cl. 56—16.6 **18 Claims**



1. A peanut harvesting maching comprising, in combination:

a harvester body including pick-up head means for gathering in peanut vines with peanuts attached and means for separating peanuts from their vines;
support wheels for said harvester body;
a peanut collection box mounted on top of said body and having a bottom opening at one side thereof;
means for discharging separated peanuts upwardly into said collection box through said bottom opening;
means for elevating said collection box and tipping it to that other side of said body opposite said one side of the collection box to discharge the contents thereof into a receptacle alongside said machine, and including an upright assembly at said other side of the machine, arms pivotally connected to said upright assembly fore and aft of said box and extending transversely downwardly therefrom into pivotal connection with the bottom portion of said box essentially midway between the opposite sides thereof, extensible means connecting said body to said arms for swinging said arms about their pivotal connections to said upright assembly bodily to lift said box to a position above said upright assembly, and linkage means interconnecting said box to said upright assembly for maintaining said box essentially level as it moves to said position above the upright assembly and then to tilt said box downwardly toward said other side of the body; and
a door normally closing that other side of said collection box at said other side of said machine, said door being provided with a hinge along the bottom edge thereof, at least one of said arms having an extension projecting from its pivotal connection with said collection box, and linkage means connecting said extension to said door for closing said door positively when the collection box is in lowered position and for allowing said door to swing downwardly into position in which it forms a continuation of the bottom of the box when the latter is tipped.

3,846,965

SIMULTANEOUS MULTIPLE TWISTING APPARATUS

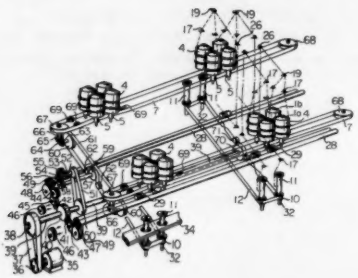
Sakujiro Matsumura; Tadashi Yamamura; Akira Ogura, and Masataka Hayashi, all of Aichi-ken, Japan, assignors to Toyo Tire Cord Company Limited, Osaka, Japan

Filed May 21, 1973, Ser. No. 362,107

Claims priority, application Japan, May 26, 1972, 47-051680

Int. Cl. D01h *1/10, 1/28, 7/86*

U.S. Cl. 57—58.52 **10 Claims**



1. A multiple twisting apparatus provided with at least one twisting unit comprising a first twisting device provided with at least two two-for-one twisting assemblies disposed in a sustantially upright condition, means for doubling first-twisted yarns withdrawn from said two-for-one twisting assemblies, a second ring twisting assembly disposed below said first twisting device for imparting a second twist to a double yarn carried from said doubling means,

a means for positively feeding said doubled yarn to said second twisting assembly, and

a plurality of yarn guides for forming a yarn passage behind said first twisting device and for forming a yarn passage to said feeding means.

3,846,966

TWISTING OF TEXTILE FILAMENTS

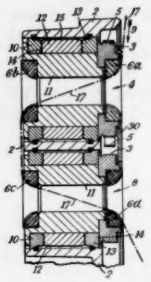
George Brandwood Peacock, Holcombe Brook, near Bury, and Austin Dobson, Rossendale, both of England, assignors to Platt International Limited, Lancashire, England

Filed Oct. 26, 1972, Ser. No. 301,107

Claims priority, application Great Britain, Oct. 29, 1971, 50454/71

Int. Cl. D02g *1/02, 1/04*

U.S. Cl. 57—77.4 **25 Claims**



1. A method of false twisting a running synthetic filament yarn comprising the step of contacting the running yarn in succession with two moving deformable twist-imparting surfaces of different hardness to false twist the yarn, the second contacted surface being of greater hardness than the first contacted surface.

3,846,967

MOUNTING APPARATUS FOR SPINNING ASSEMBLY

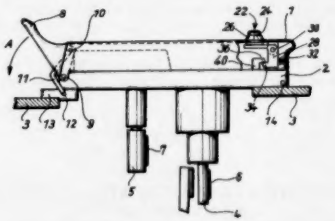
Wilhelm Braun, Wendlingen, Germany, assignor to SKF Kugellager fabriken GmbH, Schweinfurt, Germany

Filed June 20, 1972, Ser. No. 264,528

Claims priority, application Germany, June 21, 1971, 2130739

Int. Cl. D01h *1/28, 1/12*

U.S. Cl. 57—78 **6 Claims**



1. Apparatus for mounting a spinning assembly on a machine frame, comprising a housing formed of a shell pivotally mounted at one end to said machine frame and a cover pivotally mounted on said shell at the opposite end to be movable between an open and closed position relative thereto, said shell being adapted to house at least a spinning turbine journalled within said shell having a drive whorl extending outwardly therefrom for tangential engagement with a continu-

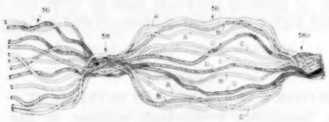
ously driven belt, a lever mechanism interconnecting said shell, said cover and said frame, said lever mechanism comprising a toggle assembly located at the end of said shell opposite to said fixed pivot means, comprising an operating lever pivotally connected at one end to said shell, and an L-shaped lever pivotally connected at one of its ends to the midpoint of said operating lever and pivotally connected at its other end to said frame, the mid-point of said operating lever being swingable about the pivotal connection of said operating lever to said shell whereby said lever is opened and movable therewith into an over the center position with respect to the pivotal connection to cause said L-shaped lever to abut said frame, further movement in the open position causing said operating lever to fulcrum about said L-shaped lever and raise said opposite end from said frame whereby said shell may be caused to pivot about said one end with said cover in closed position between a first position wherein said whorl is in engagement with said belt and a second position wherein said whorl is out of engagement with said belt to thereby interrupt the drive of said spinning turbine and thereafter to cause said cover to pivot relative to said shell.

3,846,968

YARN STRUCTURE AND METHOD FOR PRODUCING SAME

Richard W. Sheehan; David B. Parlin; Harry F. Jamrogowicz, all of Greenville, and John A. Patterson, Abbeville, all of S.C., assignors to Bigelow-Stanford, Inc., Greenville, S.C.

Filed June 11, 1973, Ser. No. 368,875
Int. Cl. D02g *3/34, 1/16, 3/12*
U.S. Cl. 57—140 J **8 Claims**



1. A continuous yarn structure comprising at least one yarn element formed from a plurality of fibers, said yarn structure comprising lengths of high bulk, substantially un-entangled yarn element fibers alternating with lengths of compacted yarn element fibers in which substantially all fibers are mutually entangled throughout the volume of the compacted lengths, at least some of the individual fibers have a lesser cross-sectional area in the final yarn structure than in their unprocessed lengths.

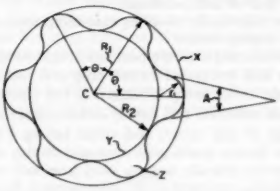
3,846,969

FALSE-TWIST TEXTURING YARN OF POLYESTER FILAMENTS HAVING MULTILOBAL CROSS SECTIONS

Jerry Bruce McKay, Kinston, N.C., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 243,795, April 13, 1972, , which is a continuation-in-part of Ser. No. 99,446, Dec. 18, 1970, abandoned. This application Aug. 30, 1973, Ser. No. 393,167
Int. Cl. D02g *3/22, 3/34*
U.S. Cl. 57—140 J **8 Claims**

1. An improvement in multifilament polyester yarn for false-twist texturing at a maximum ratio (R) of output-to-input of up to 6:1, wherein the improvement comprises yarn composed of polyester filaments of multilobal cross section characterized by a total number (N) of 6 to 10 essentially symmetric lobes of substantially equal length, equispaced radially about the center of the filament, and having between



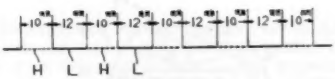
1.17 and 1.85 modification ratio (M), the filaments having a denier per filament between 3.8(R) and (5.88M − 10 + N)-(R).

3,846,970

HIGH BULK AND POTENTIALLY HIGH BULK FIBROUS MATERIAL

Keiichi Hitomi, Tokyo; Kachio Takagi, Tokyo; Seinosuke Nomura, Tokyo, and Sadayuki Okada, Odawara-shi, all of Japan, assignors to Mitsubishi Reiyon Kabushiki Kaisha and Daido Keori Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 142,546, Oct. 3, 1961, Pat. No. 3,248,771. This application Oct. 22, 1965, Ser. No. 500,599
Int. Cl. D02g *3/24*
U.S. Cl. 57—140 R **18 Claims**



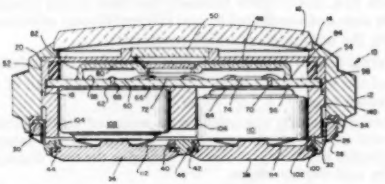
1. An elongated fibrous unit having substantially invariable denier and comprising repeating longitudinal segments having different shrinkage potentials but all being oriented, whereby said fibrous unit upon subsequent treatment to induce shrinkage will shrink more at some of said longitudinal segments than at other of said longitudinal segments, and said segments being disposed alternately axially of said elongated unit.

3,846,971

PACKAGE FOR ELECTRONIC WATCH MOVEMENT

Ernest C. Ho, Newport Beach; Karl H. Reissmueller, Tustin, and Richard J. Belardi, Anaheim, all of Calif., assignors to Hughes Aircraft Company, Culver City, Calif.

Filed Mar. 21, 1973, Ser. No. 343,320
Int. Cl. G04b *29/00*
U.S. Cl. 58—23 R **10 Claims**



1. A package for packaging components of a digital electronic watch movement in a watch case comprising:

a substantially flat substrate having a peripheral edge and a face and a back, said substrate being fabricated from insulative material;

at least one bare integrated circuit chip secured to said face of said substrate;

an electronically controlled digital display device mounted on the face of said substrate;

means for electrically coupling said integrated circuit chip to said display device;

a cover positioned over the portions of said substrate which include said integrated circuit chip and said display device, said cover being substantially flat where it extends over said substrate and having downturned flanges along the edge of said cover, said cover having a transparent window therein positioned over said display device, said cover being optically opaque away from said window said cover being attached at its downturned flanges to the front of said substrate and spaced by said flanges over said display device and said chip to enclose the integrated circuit chip and display device within a protected volume defined by said flanges, cover, and substrate.

3,846,972

CRYSTAL CONTROLLED WATCH

David Doss, Overland Park, Kans., assignor to Textron Inc., Providence, R.I.

Filed Dec. 26, 1973, Ser. No. 427,910

Int. Cl. G04c *3/00*; **G04b** *27/00*

U.S. Cl. 58—23 R **5 Claims**

1. In an electronic watch comprising a crystal controlled watch movement mounted in a watch case; said watch movement having a crystal controlled oscillator circuit, manually operative internal oscillator circuit adjustment means for fine tuning the frequency of oscillation of the oscillator circuit, visual time display means, and manually operative internal display adjustment means for changing the time displayed by said display means; said watch case having a generally tubular side wall, a generally transparent top wall, a generally circular bottom wall, and exterior manually operated means mounted on the case and connected to said internal display adjustment means; the improvement which comprises:

internal display adjustment means located on the underside of the watch movement adjacent the bottom wall of the watch case,

exterior manually operated means mounted on the bottom wall of the watch case and connected to the internal display adjustment means for changing the time displayed by said display means.

internal oscillator circuit adjustment means located on the underside of the watch movement adjacent the bottom wall of the watch case, and

access means mounted on the bottom wall of the watch case for providing access to the internal oscillator circuit adjustment means for fine tuning the frequency of oscillation of said oscillator circuit.

3,846,973

AUTOMATIC WINDING WATCH WITH BRIDGE PLATE OFFSET TO RECEIVE AUTOMATIC WINDING MECHANISM

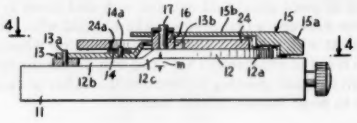
Hirohisa Kurita, Shimosuwa-machi, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 212,456, Nov. 27, 1971, abandoned. This application Oct. 15, 1973, Ser. No. 406,320

Claims priority, application Japan, Dec. 28, 1970, 45-132723

Int. Cl. G04b *5/02*, *7/00*

U.S. Cl. 58—82 R **6 Claims**



1. In an automatic winding watch comprising a basic watch movement having a main spring, an oscillating weight, and an automatic winding mechanism for transforming the movement of the oscillating weight into movement for winding the main spring of the watch movement, the improvement that the watch movement comprises a bridge plate with two parallel portions of said bridge plate offset from one another so that one of said portions is lower and the other of said portions is higher, and the automatic winding mechanism is superposed on the lower portion of the bridge plate so that the total height of the watch movement and the automatic winding mechanism is reduced, said bridge plate comprising a single piece of metal plate of uniform thickness bent to form said offset between said higher and lower portions of said bridge plate.

3,846,974

MOTOR-BARREL WATCH MOVEMENT

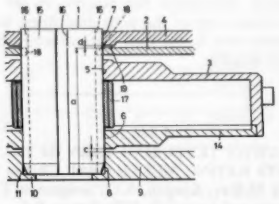
Urs Giger, Solothurn, Switzerland, assignor to Eta A.G. Ebauches-Fabrik, Grenchen, Switzerland

Filed Nov. 16, 1973, Ser. No. 416,430

Claims priority, application Switzerland, Dec. 18, 1972, 18385/72

Int. Cl. G04b *1/18*

U.S. Cl. 58—87 **9 Claims**



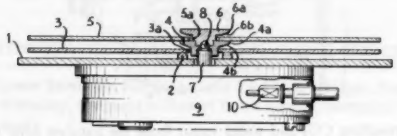
1. A motor-barrel watch movement characterized in that the barrel arbor is made of one piece with a circular, cylindrical surface, and in which rotation of the arbor in the frame of the movement and the rotation of the barrel about the arbor are ensured by four annular bearings surrounding said cylindrical surface and which lie in the space between an aperture fashioned on one hand in two of the frame components and on the other, in the drum and the barrel cover, said arbor including an anchoring means for the spring motor characterized as a recess formed in the cylindrical surface of said arbor.

3,846,975

TIME INDICATOR FOR A TIMEPIECE

Yasuyuki Masui, Tokyo, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Filed Feb. 25, 1974, Ser. No. 445,240
Claims priority, application Japan, Feb. 28, 1973, 48-25253
Int. Cl. G04b 19/00
U.S. Cl. 58—126 A 7 Claims



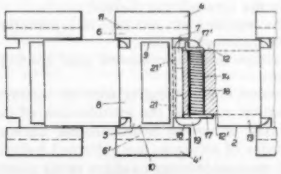
1. Time indicator for use in a timepiece comprising two transparent driven disc indicators each having a non-circular central aperture, one of said disc indicators comprising an hour disc indicator and another of said disc indicators comprising a minute disc indicator, first driving means driving said hour disc indicator comprising a driven hour shaft and a first driving element on said hour shaft, said first driving element on said hour shaft having a non-circular cross section and a support surface, said another disc indicator comprising a minute disc indicator resting on said support surface of said first driving element for relative rotation thereon, second driving means driving said minute disc indicator comprising a driven minute shaft coaxial with said hour shaft and a second driving element on said minute shaft, said second driving element having a non-circular cross section, said hour and minute disc indicators each having a non-circular central aperture receiving the corresponding first and second driving elements, said apertures being complementary with the cross section of said corresponding driving elements.

3,846,976

EXPANSION BRACELET

Rolf Schaudel, Karlsbad-Langensteinbach, Germany, assignor to Rodi & Wienenberger Aktiengesellschaft, Pforzheim, Germany

Filed Oct. 11, 1973, Ser. No. 405,592
Claims priority, application Germany, Nov. 2, 1972, 2253557
Int. Cl. F16g 13/24
U.S. Cl. 59—79 R 8 Claims



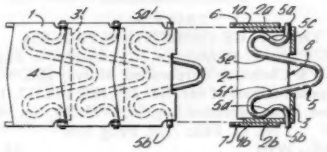
1. An expansion bracelet, particularly for wristwatches, comprising a row of connected links, each of said links comprising a plate member having a pair of first edge portions extending transversely of said row, and a pair of second edge portions extending longitudinally of said row; a pair of solid outer members each connected to one of said second edge portions and being spaced from one another transversely of said row; a solid inner member located between said outer members and in part projecting beyond them in direction longitudinally of said row, said inner member having an underside facing towards said plate member and provided with a pair of transversely extending channels; a pair of substantially C-shaped brackets, each having a bight portion pivotably received in one of said channels and a pair of leg portions, the leg portions of one of said brackets being pivotably connected to one of said first edge portions of said plate member so that said one bracket can be tilted longitudinally of said row out from between said outer members; and a pair of biasing springs received in the respective channels in engagement with the respective brackets and permanently resisting such tilting thereof.

3,846,977

WRISTLET AT LEAST PARTIALLY MADE OF ELEMENTS ARTICULATED TO EACH OTHER

Emile Currat, Vesenaz, Switzerland, assignor to Etampes et Mecanique L. Serafini, Geneva, Switzerland

Filed Aug. 20, 1973, Ser. No. 389,876
Claims priority, application Switzerland, Aug. 30, 1972, 12764/72
Int. Cl. F16g 15/00
U.S. Cl. 59—80 4 Claims



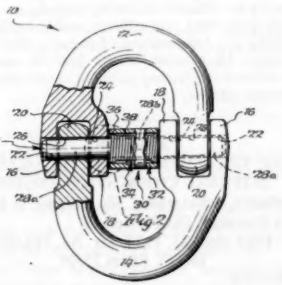
1. Wristlet at least partially constituted with elements articulated on each other, characterized by the fact that these elements are hollow and are articulated by means of a spring having the general shape of a W developing itself inner the elements, the ends of this spring being bent so as to pass through lateral walls of the element for engaging holes provided in the adjacent element, while the medium portion of the spring constitutes a buckle extending, through an opening of the element, into the adjacent element.

3,846,978

JOINER LINK PIN RETAINER

Kenneth D. Schreyer, Clarence, N.Y., assignor to Columbus McKinnon Corporation, Tonawanda, N.Y.

Filed Apr. 20, 1973, Ser. No. 352,924
Int. Cl. F16g 15/04
U.S. Cl. 59—85 3 Claims



1. In a joiner link including a pair of substantially U-shaped complementary link halves, said link halves having leg por-

tions formed with through openings, a pin for pivotally joining said link halves, said pin having end portions passing through said openings and a central portion disposed between said leg portions, and a pin retainer disposed about said central portion of said pin to abut against said leg portions for normally constraining said pin from uncoupling movement axially through said openings, the improvement wherein said pin retainer comprises in combination:

an outer sleeve having a length to extend substantially between for end abutment with said leg portions; and

a variable diameter inner sleeve disposed radially intermediate said pin and said outer sleeve, said inner sleeve having enlarged diameter portions and a reduced diameter portion, said inner sleeve portions being resiliently deformable in a direction radially thereof, characterized in that said reduced diameter portion is dimensioned to resiliently grip said pin without engaging an inner surface of said outer sleeve, said enlarged diameter portions are dimensioned to resiliently grip said inner surface of said outer sleeve without engaging said pin, said enlarged diameter portions are arranged adjacent opposite ends of said inner sleeve, and said enlarged diameter portions additionally form guides for directing insertion of an end of said pin axially into said reduced diameter portion.

3,846,979

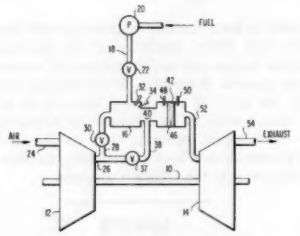
TWO STAGE COMBUSTION PROCESS

William C. Pfefferle, Middletown, N.J., assignor to Engelhard Minerals & Chemicals Corporation, Murray Hill, N.J.

Continuation-in-part of Ser. No. 209,169, Dec. 17, 1971, abandoned. This application Aug. 16, 1973, Ser. No. 388,906

Int. Cl. F02c *7/00;* **F02g** *3/00*

U.S. Cl. 60—39.04 **25 Claims**



1. In a method for oxidizing carbonaceous fuel which when burned with a stoichiometric amount of air has an adiabatic flame temperature of at least about 3,300° F., the improvement comprising admixing the carbonaceous fuel and air, partially combusting the fuel in a thermal combustion zone and producing an effluent containing partially combusted fuel, immediately quenching said effluent, and essentially adiabatically oxidizing at a temperature of about 1,500° to 3,200° F. at least about 10 percent of the fuel by contacting the quenched effluent containing partially combusted fuel with a solid oxidation catalyst.

3,846,980

CATALYTIC TREATMENT OF RECYCLE GASES FOR AN INTERNAL COMBUSTION ENGINE

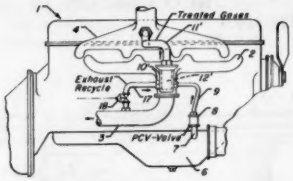
Ted V. DePalma, Schaumburg, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 23, 1973, Ser. No. 344,307

Int. Cl. F02m *25/06*

U.S. Cl. 60—279 **9 Claims**

1. In the operation of an internal combustion engine to reduce noxious gaseous components therefrom, the improved operation which comprises, positioning a gas previous oxidation catalyst in a confined zone in heat exchange relationship with an exhaust gas outlet means from said engine and effecting indirect exhaust gas heating to said catalyst, collecting at least a portion of a hydrocarbon containing gaseous stream from the crankcase ventilation system of said engine and effecting the passage of such stream through said catalyst into the intake manifold system for said engine to thereby provide



for resulting CO_2 and water vapor from the catalyst zone to admix with the air-fuel mixture being introduced to the engine, and collecting at least a portion of the exhaust gas stream from said engine and recycling said exhaust gas stream through said catalyst to combine with said gaseous stream from said crankcase ventilation system prior to feeding thereof to said intake manifold system.

3,846,981

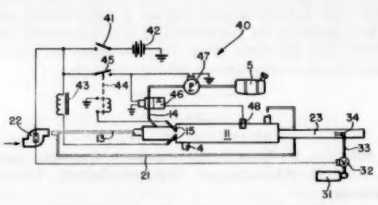
EMISSION CONTROL PROCESS AND SYSTEM

Michael M. Paczkowski, Nanimo, British Columbia, Canada, assignor to Nanaimo Enviro Systems, Corp., Seattle, Wash.

Continuation of Ser. No. 82,053, Oct. 19, 1970, abandoned, Continuation-in-part of Ser. No. 70,394, Sept. 8, 1970, abandoned. This application June 4, 1973, Ser. No. 366,972

Int. Cl. F01n *3/14*

U.S. Cl. 60—286 **2 Claims**



1. An emission control system for fitting onto a wheeled vehicle powered by an internal combustion engine for reducing the amounts of unburned hydrocarbons, carbon monoxide and oxides of nitrogen emitted in the exhaust gases, comprising:

a high temperature unit having a non-catalytic combustion zone in the forward end thereof,

means for injecting air and fuel in a predetermined ratio into the combustion zone,

ignition means in the combustion zone igniting the fuel-air mixture,

a first conduit communicating with the forward end of the combustion zone for the introduction of exhaust gases containing unburned hydrocarbons, carbon monoxide and oxides of nitrogen, the unburned hydrocarbons and carbon monoxide being oxidized in the combustion zone to carbon dioxide and water,

baffle means in the combustion zone controlling flow of the exhaust gases therethrough,

a perforated tubular member within the combustion zone surrounding the flame front resulting from combustion of the air-fuel mixture in the combustion zone,

a second conduit communicating with the combustion zone providing an exit for the hot oxidized gases,

blower means communicating with the second conduit injecting ambient air into the hot oxidized gases exiting from the combustion zone to cool them, and

means injecting regulated amounts of nitrogen-containing compound into the cooled gas stream to react with the oxides of nitrogen, converting them to nitrogen gas and water, said means including (1) a storage vessel for the nitrogen-containing compound, (2) a nozzle positioned in the stream of exhaust gases exiting from the combustion zone, (3) a conduit connecting the nozzle and storage vessel, and (4) valve means regulating the amount of nitrogen-containing compound injected into the exhaust gases through the conduit and nozzle.

3,846,982

HYDROSTATIC DRIVE FOR AUTOMOTIVE VEHICLES OR THE LIKE

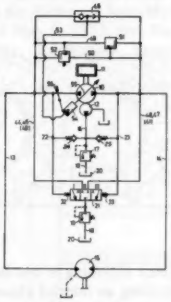
Werner Rometsch, Gerlingen, and Karl Veil, Uhingen, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 29, 1973, Ser. No. 364,439

Claims priority, application Germany, June 27, 1972, 2231421

Int. Cl. F16h *39/46*

U.S. Cl. 60—445 **10 Claims**



1. A hydrostatic drive for automotive vehicles or the like, comprising at least one adjustable first pump; a motor; high- and low-pressure lines connecting said pump with said motor; hydraulic adjusting means for said pump; an auxiliary pump having an outlet; relief valve means arranged to open in response to a predetermined fluid pressure at said outlet; prime mover means for said pumps; conduit means connecting said outlet with said low-pressure line and with said adjusting means; and a scavenger valve having a body, a valve member reciprocable in said body and having first and second ends respectively subjected to fluid pressure in said high- and low-pressure lines, and first and second prestressed springs reacting against said body and respectively bearing against said first and second ends of said valve member, said valve member being movable by pressurized fluid between a neutral position and at least one second position in which said scavenger valve allows the outflow of heated fluid from said low-pressure line, the bias of said springs upon said valve member being such that said valve member leaves said neutral position only when the fluid pressure in said high-pressure line exceeds said predetermined pressure.

3,846,983

HYDRAULIC FLUID RESERVOIR PRESSURIZATION ARRANGEMENT

Allan L. Freedy, Aurora, and Norman E. Risk, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 19, 1973, Ser. No. 416,827

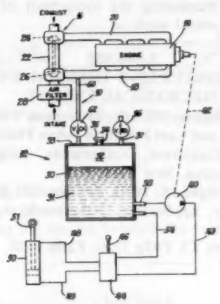
Int. Cl. F15b *1/06*

U.S. Cl. 60—478 **5 Claims**

1. A hydraulic fluid reservoir pressurization arrangement for a closed hydraulic system having a reservoir for containing a variable volume of hydraulic fluid below its full capacity so as to provide a variable air space above such hydraulic fluid comprising:

an internal combustion engine having a forced air intake system providing a source of air under pressure; and

conduit means connecting said source of air under pressure



with said variable air space in the reservoir to insure a continuous supply of hydraulic fluid to the system so as to avoid any cavitation forming interruptions in the flow of such fluid to the system.

3,846,984

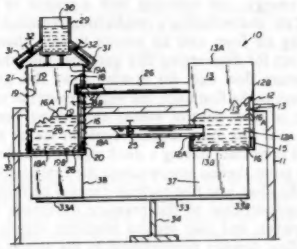
TEMPERATURE DIFFERENTIAL FLUID MOTOR

Israel Siegel, 351 W. 71st St., New York, N.Y. 10023

Filed Apr. 29, 1974, Ser. No. 464,823

Int. Cl. F01k *27/00*; **F03g** *7/06*

U.S. Cl. 60—509 **13 Claims**



1. A temperature differential fluid motor comprising at least one relatively warm and at least one relatively cold chamber, inside of said chambers being sealed from the external environment,

a supply of liquid disposed in said chambers dividing the chambers into a vapor chamber portion and a liquid chamber portion,

at least one of said chambers having a moveable portion adapted to be displaced from an initial position when the vapor pressure within said chamber reaches one predetermined limit,

means for returning said moveable portion to its initial position when vapor pressure in said chamber reaches another predetermined limit,

vapor connecting means for placing the respective vapor portions of cold and warm chambers into communication,

vapor control means for controlling the flow of vapor between said cold and warm chamber to create periodic pressure differential between said chambers,

said control means being operatively associated with said moveable portion of one of said chambers,

liquid connecting means for placing the liquid portions of the respective cold and warm chambers into communication,

liquid control means for controlling flow of liquid between said chambers,

means for obtaining a temperature differential between said chambers, and

a force transmission member connected to said moveable portion for translating the movement of said moving portion into useful work.

3,846,985
DEVICE FOR CONVERTING THERMAL ENERGY INTO MECHANICAL ENERGY

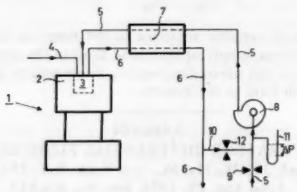
Albertus Peter Johannes Michels; Franciscus Wilhelmus Engelbert Gasseling, and Carl Fridriech Johan Findhammer, all of Emmasingel, Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 16, 1973, Ser. No. 351,471

Claims priority, application Netherlands, Apr. 29, 1972, 7205878

Int. Cl. F03g *7/06;* **F25b** *9/00*

U.S. Cl. 60—521 **9 Claims**



1. In an apparatus for converting thermal energy into mechanical energy, and operable with a source of fuel and a source of air, and including a combustion chamber, a first duct for flowing air from said air source to said chamber and a second duct for discharging flue gas from said chamber, and a third return flow duct for flowing some flue gas from the second duct to the first duct, the improvement in combination therewith of flow control means comprising first restrictor means in said first duct, second restrictor means in said third duct, said third duct having a discharge end feeding said first duct at a point therein intermediate the first restrictor means and the chamber, said first restrictor means permitting air flow directly proportional to the pressure difference across said first restrictor, and said second restrictor means permitting flue gas flow directly proportional to the square root of the pressure difference across said second restrictor.

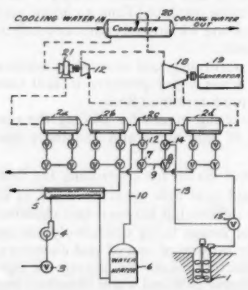
3,846,986
GEOTHERMAL PLANT CLEANING SYSTEM

James Hilbert Anderson, 1615 Hillock Ln., York, Pa. 17403

Filed Aug. 27, 1971, Ser. No. 175,679

Int. Cl. F01b *7/00*

U.S. Cl. 60—641 **10 Claims**



1. In a system for utilizing the heat obtainable from a source of geothermal hot water of the type including at least one heat exchanger having internal walls through which heat is transmitted from geothermal hot water to another fluid as said geothermal hot water and said other fluid flow through said heat exchanger, the improved means for removing mineral material deposited from said geothermal hot water on surfaces of said internal walls comprising means for heating a body of water of lower mineral content than the geothermal hot water to a temperature at least equal to the temperature of the geothermal hot water flowing through said heat exchanger, said heating means including heat exchange means for passing the substantially mineral-free water in heat exchange relationship with geothermal hot water, and valve and conduit means for replacing the geothermal hot water flowing through said heat exchanger with heated water from said heating means whereby said heated water dissolves mineral material from said surfaces of said internal walls.

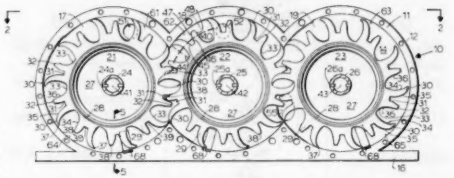
3,846,987
ROTARY FLUID MOTOR

Guy N. Baldwin, 20 Circle Way, Mill Valley, Calif. 94941

Filed Oct. 16, 1973, Ser. No. 406,947

Int. Cl. F01k *7/02*

U.S. Cl. 60—690 **9 Claims**



1. A rotary fluid motor including in combination:

a hollow casing providing an interior chamber shaped substantially as first, second, and third successive and intersecting cylindrical chambers with flat side walls,

first, second, and third identical, interengaging generally cylindrical rotors, each in and aligned with the respective said cylinder, said rotors having lateral flat surfaces facing said side walls and being mounted in said casing for rotation about three respective spaced-apart, parallel, axes,

each said rotor having its periphery consisting of a series of peripheral projections and recesses providing for the interengagement of said rotors and comprising a serially repeated succession of identically spaced series of piston blade, gear recess, gear tooth, and piston-blade-receiving notch, whereby said rotors rotate together with said second rotor rotating in the opposite direction from said first and third rotors, with each blade of each rotor engaging a notch of another rotor, and vice versa, during each revolution, and each gear tooth of each rotor engaging a gear recess of another rotor, and vice versa, during each revolution, to provide said interengagement and to synchronize the rotary movement of said rotors,

each said notch comprising two cylindrical concave arcs meeting at a vertex, one said arc defining one edge of a blade, the other said arc defining one edge of a said gear tooth, each said gear recess being partially defined by another edge of its adjacent said gear tooth and by a second edge of its adjacent said blade, said second edge being a cylindrical convex arc which during engagement with the notch of its adjacent rotor is in sliding contact therewith,

said casing having a first inlet port at the intersection of said first and second chambers offset from the plane joining the axes of said first and second rotors, a second inlet port at the intersection of said second and third chambers offset from the plane joining the axes of said second and third rotors and on the opposite side from said first inlet port,

said casing having first and second outlet ports from said first and second chambers respectively, each at a rotational distance less than 90° beyond said first inlet port, first conduit means connecting said first and second outlet ports to said second inlet port,

said casing having a third outlet port lying rotationally beyond said first outlet port from said first chamber, and at all times separated therefrom by at least one said blade, a fourth outlet port from said second chamber rotationally between said second outlet port and said second inlet port, and at all times separated therefrom by at least one said blade, a fifth outlet port from said second chamber rotationally beyond said second inlet port, and a sixth outlet port from said third chamber rotationally beyond said second inlet port, and

second conduit means for outlet gases connected to said third, fourth, fifth, and sixth outlet ports.

3,846,988

SWELL DAMPER

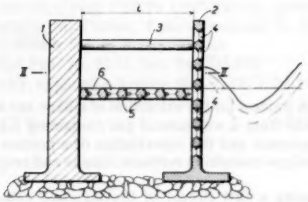
Jacques Edouard Lamy, Fontenay-aux-Roses, France, assignor to C. G. Doris (Compagnie Generale pour les Development Operationnels des Richesses Sous-Marines), Paris, France

Filed May 9, 1973, Ser. No. 358,500

Claims priority, application France, May 10, 1972, 72.16869

Int. Cl. E02b *3/06*

U.S. Cl. 61—3 **20 Claims**



1. A swell-damping device for protecting a region against a swell developing in a volume of water, said device comprising means for establishing between said region and said volume of water in which the swell develops, a curtain having its base immersed in said volume of water and a pluralityy of ducts distributed over the surface of the curtain in order to pass the water through the curtain, said ducts having a profile flared towards said region with a sufficiently steep gradient of section for the water flowing from said volume of water into said region to break away from the wall of the duct and produce eddies which dissipate the water energy.

3,846,989

INSULATED EMBANKMENT DESIGN TECHNIQUES

Glenn R. Burt, Deer Park, Tex.; Albert C. Condo, Newton Sq., Pa., and George R. Knight, College, Alaska, assignors to Atlantic Richfield Company, New York, N.Y.

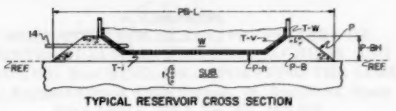
Filed July 10, 1972, Ser. No. 270,359

Int. Cl. E02d *3/00;*

U.S. Cl. 61—.5 **12 Claims**

1. A method which permits the long term continuous use of a heated liquid storage reservoir in permafrost regions said reservoir being supported by frozen terrain and being thermally insulated from said terrain by a thermal barrier comprised of a layer of synthetic thermal insulation, said method comprising the steps of:

a. Storing heated liquid in the reservoir until the thaw front resulting from the transmission of heat from the heated liquid downwardly through the frozen terrain extends to a predetermined depth,



TYPICAL RESERVOIR CROSS SECTION

b. Removing substantially all of the heated liquid from the reservoir, and

c. Permitting the terrain beneath the reservoir to refreeze.

3,846,990

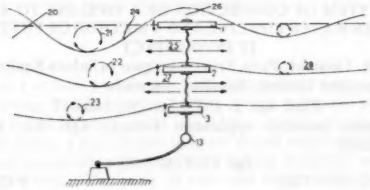
FLOATING WAVE BARRIER

Wallace William Bowley, Stafford Springs, Conn., assignor to William Barney Ritchie, Jr., Duxbury, Mass., a part interest

Continuation-in-part of Ser. No. 267,086, June 28, 1972, abandoned. This application May 7, 1973, Ser. No. 357,938

Int. Cl. E02b *3/04*

U.S. Cl. 61—5 **14 Claims**



1. A wave barrier comprising a plurality of buoyant substantially flat disk members each member being of relatively great horizontal extent compared to its thickness, said members being connected with flexible line and anchored in a configuration such that when placed in water, the members are located at different vertical levels along a common vertical axis, the mass and buoyancy of said members and the distance between said members being such as to provide vertical, out of phase motion of said members to exert a compression force on water between said members to reduce a vertical wave velocity component and increase a horizontal wave velocity component in both a landward and seaward direction without substantial contact of said members.

3,846,991

PILE DRIVING METHOD AND APPARATUS

Serge S. Wisotsky, c/o ORB Inc., 89 Bullard St., Sharon, Mass. 02067, assignor to ORB, Inc., Marion, Ohio

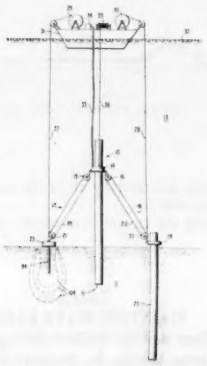
Continuation-in-part of Ser. No. 163,422, July 16, 1971, abandoned. This application June 30, 1972, Ser. No. 267,752

Int. Cl. E02d *7/00, 7/18, 7/20*

U.S. Cl. 61—53.5 **37 Claims**

1. In a method of driving piles into soil with a vibratory or impulsive driving means adapted to subject the pile to repetitive vibrations or pulses for driving same, the improvement which comprises: subjecting the pile to a steadily applied, downwardly directed force which is at least 200% of the peak force generated by any such vibration, which substantially exceeds the incidental preload provided by the driving means and pile, and which is of sufficient magnitude to appreciably deflect the subsoil in which the pile is embedded for maintain-

ing said soil in a deformed and prestressed condition, and driving the pile by superimposing said vibrations or pulses



upon said steadily applied force, thereby reducing the amount of available driving energy which would otherwise be lost in the reversible elastic deformation of the soil and pile.

3,846,992

SYSTEM OF CONNECTION OF A PIPELINE TO AN UNDERWATER PIPELINE AND A METHOD OF PUTTING IT INTO EFFECT

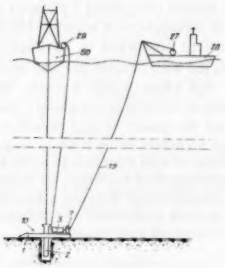
Jean A. Liautaud, Paris, France, assignor to Subsea Equipment Associates Limited, Hamilton, Bermuda

Filed Apr. 5, 1973, Ser. No. 348,417

Claims priority, application France, Apr. 11, 1972, 72.12603

Int. Cl. F16l *1/00*

U.S. Cl. 61—72.3 **9 Claims**



1. Apparatus for connecting an upwardly extending member of an underwater pipe system to the surface, said apparatus comprising:

1. a baseplate adapted to be anchored on the bottom of a body of water;
2. a reception and attachment device integrally connected to said baseplate, said reception and attachment device being shaped to engage a locking head to be recited;
3. a connection frame, the lower surface of which is shaped to conform to the upper surface of said baseplate;
4. a locking head mounted on said connection frame, said locking head being shaped to engage said reception and attachment device and to orient said connection frame with respect to said baseplate;
5. a guide and mating structure mounted on said connection frame, said guide and mating structure being shaped to surround an upwardly extending member of an underwater pipe system; and
6. means for bringing said locking head into engagement with said reception and attachment device, thereby fixing said connection frame on the upper surface of said baseplate.

3,846,993

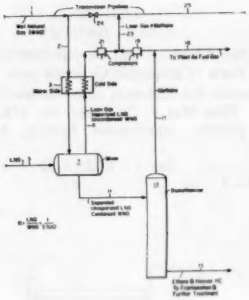
CRYOGENIC EXTRACTION PROCESS FOR NATURAL GAS LIQUIDS

Bruce L. Bates, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 1, 1971, Ser. No. 111,330

Int. Cl. F25j *3/06, 3/02*

U.S. Cl. 62—23 **5 Claims**



1. A process for the extraction of ethane and heavier hydrocarbons from a wet natural gas containing methane, ethane and propane and the vaporization of a portion of a liquefied natural gas containing methane, ethane and propane, comprising:

passing a first stream of the liquefied natural gas and a second stream of the wet natural gas into a mixing zone so as to vaporize a portion of the liquefied natural gas and condense a portion of the wet natural gas;

removing from the mixing zone a third stream comprising the vaporized liquefied natural gas and the wet natural gas which is not condensed;

removing from the mixing zone a fourth stream comprising the condensed wet natural gas and the liquefied natural gas which is not vaporized;

passing the fourth stream to a demethanizer;

removing a fifth stream comprising methane from the demethanizer; and

removing a sixth stream from the demethanizer comprising hydrocarbons in the fourth stream heavier than methane.

3,846,994

LOW TEMPERATURE NATURAL GAS TRANSMISSION

William M. Reid, 1766 Maux, Houston, Tex. 77043

Filed Nov. 5, 1973, Ser. No. 412,783

Int. Cl. F25b *9/02*

U.S. Cl. 62—87 **6 Claims**

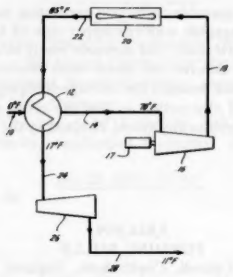
1. A method for moving natural gas at low temperatures in a pipeline which comprises;

a. conducting the natural gas through a heat exchanger wherein heat is transferred with the cooled gas from step (c);

b. compressing the natural gas from step (a) to a pressure greater than the pressure of the pipeline at the point at which the gas is returned thereto;

c. cooling the compressed gas by rejecting heat to the surroundings;

d. conducting the cooled gas to the heat exchanger wherein heat is transferred with the gas entering from the pipeline; and



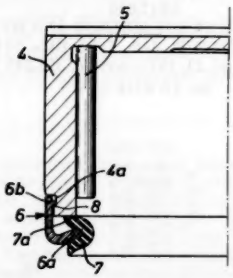
e. returning the gas to the pipeline at pipeline pressure and a temperature below that which would damage the environment.

3,846,995

SEALING DEVICE FOR USE IN UNIVERSAL JOINTS

Jacques Mangiavacchi, Chatou, France, assignor to Societe Anonyme: Glaenzer Spicer, Poissy, France

Filed Feb. 26, 1973, Ser. No. 335,891
Claims priority, application France, May 5, 1972, 72.16142
Int. Cl. F16d 3/26
U.S. Cl. 64—17 R **4 Claims**



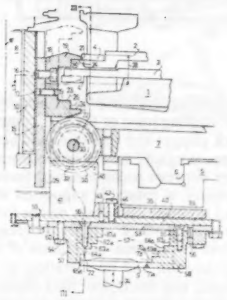
1. A sealing device for use in universal joints of the type including a pair of yokes, a cross piece joining the yokes, the arms of the cross piece being mounted for rotation in bearings arranged in the yokes, comprising a lipped rubber gasket for sealing each bearing, an annular clip for retaining each gasket in position on its associated bearing, each said clip being secured to its associated bearing coaxial to the associated arm and having an inner circular flange engaging the lipped gasket, said annular clip being generally L-shaped in cross-section, and wherein the rubber gasket straddles the inner flange formed as the horizontal leg of the L-shaped section, the other vertical leg of the L-shaped section carrying securing means for cooperating with complementary securing means on the bearing to position each clip and rubber gasket axially relative to the associated bearing, the portion of said clip joining the legs of the L-shaped section being slightly bulged out for facilitating the positioning of the lip of the gasket to be gripped between said clip and said one end of the bearing.

3,846,996

MECHANISM FOR ACTUATING PATTERN OR CONTROL DRUMS IN KNITTING MACHINES, AND KNITTING MACHINES INCORPORATING THE SAME

Jorge Rectoret Comas, Calle Santalo, 96, Barcelona, Spain

Filed June 1, 1972, Ser. No. 258,490
Claims priority, application Spain, June 8, 1971, 392471
Int. Cl. D04b 15/74
U.S. Cl. 66—50 B **10 Claims**

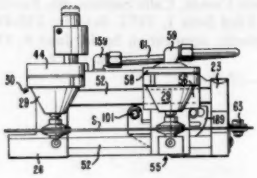


1. In a circular knitting machine, pattern drum means, a pair of turning means operatively connected with said pattern drum means for respectively turning the latter in one direction or the other, a pair of cam follower means respectively connected operatively with said pair of turning means for respectively actuating the latter to turn said drum means in one direction or the other, rotary driven cam means supported for rotary movement about an axis of a cylinder of the knitting machine, said rotary driven cam means having a pair of cam portions for respectively cooperating with said pair of cam follower means to transmit movement through one or the other of said cam follower means to one or the other of said turning means for turning the drum means in one direction or the other, said pair of cam portions of said driven cam means being fixed to each other for rotation about the cylinder axis as a single unit and having with respect to each other a space which is too great for possible simultaneous actuation of both of said cam follower means, rotary driving cam means for assuming a plurality of positions to be respectively transmitted to said driven cam means for controlling the operation of the pair of cam follower means thereby, said rotary driving cam means also being supported for rotary movement about the axis of the cylinder of the knitting machine, transmission means extending between and operatively connected with said driving and driven cam means for transmitting movement of said driving cam means to said driven cam means so that the latter will assume a position determined by the position of said driving cam means, positioning means situated in the path of rotary movement of said driving cam means for engaging and positioning the latter, said positioning means itself having a plurality of positions and said driving cam means responding to the position of said positioning means for providing through said transmission means a corresponding position of said driven cam means, information means containing data for controlling said pattern drum means, and detecting means cooperating with said information means and operatively connected with said positioning means for detecting the information in said information means and for responding to the latter information to displace said positioning means to a position corresponding to the detected information.

3,846,997
STOCK FEEDER

Arthur F. Leis, c/o A. F. Leis Co., Inc., 4316 Webster St., Dayton, Ohio 45414

Filed July 23, 1973, Ser. No. 381,502
Int. Cl. B21d 43/10
U.S. Cl. 72—6 15 Claims

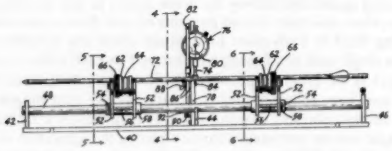


1. A device for feeding stock in precise step-by-step increments into a metal working press or the like, comprising a first fluid actuated stock gripper and a second fluid actuated stock gripper, means supporting said second stock gripper for reciprocating movement between predetermined limits relative to said first stock gripper, a rotatably supported shaft, a fluid actuator connected to rotate said shaft, means for connecting said shaft to said second stock gripper to reciprocate said second stock gripper in response to rotation of said shaft to effect gradual acceleration and deceleration of said second stock gripper adjacent said limits, and fluid control means for operating said fluid actuator in response to a predetermined pressure in at least said second stock gripper.

3,846,998
MACHINE FOR TESTING AND STRAIGHTENING ARROWS

William E. Lock, 11780 Michael Rd., Central Point, Oreg. 97501

Filed Aug. 9, 1973, Ser. No. 387,124
Int. Cl. B21d 3/16
U.S. Cl. 72—34 6 Claims



1. An arrow testing and straightening machine for testing straightness and directly, manually correcting deviations from straightness of arrow shafts composed of freely bendable, metallic tubing, comprising, in combination,

a. a stand located at a central deflection detecting and straightening station;

b. a fixed, straight, horizontal trackway constructed and arranged to extend at opposite sides of the deflection detecting and straightening station;

c. a pair of cooperative arrow supporting carriages mounted on said trackway at opposite sides of said station with freedom for individual adjustment along the trackway toward and from said central station, each of said carriages including a pair of side by side rollers adapted jointly to support an arrow shaft segment between them, and means constructed and arranged to operate the rollers of each carriage in unison for turning a roller supported arrow;

d. a sensitive, deflection detecting, magnifying and indicating instrument of the dial type mounted on the stand and comprising a plunger, spring pressed downward to bear downward against the upper side of the arrow shaft being tested, and

e. a manually operable deflection correcting means at said station, engageable with the upper side of the carriage-bridging arrow shaft, and movable freely in a downward direction to deform the arrow shaft beyond its elastic limit, the space beneath the carriage-bridging arrow shaft being free of obstruction so that the arrow shaft can be freely deformed to any extent dictated by the judgment of the operator.

3,846,999
FORMING ROLLS

Gordon Sidney Connell, Cheltenham, England, assignor to Formflo Limited, Gloucestershire, England

Filed Nov. 22, 1972, Ser. No. 308,871
Claims priority, application Great Britain, Nov. 24, 1971, 54644/71
Int. Cl. B21h 5/02
U.S. Cl. 72—68 10 Claims

1. A method of preparing a forming roll for use in preparing gears by roll forming workpieces comprising the steps of:

a. preparing a reference gear by machining operations not including rolling, having teeth whose profile corresponds accurately to the desired profile of said gears,

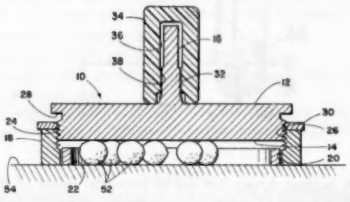
b. rolling said reference gear against a blank of material softer than the material of said reference gear to shape in said blank teeth having a modified profile, and

c. hardening said blank to give said forming roll which, when used to roll form said gears from said workpieces, will shape in said workpieces teeth corresponding accurately to said desired profile.

3,847,000
BALL SPRUE SWAGE METHOD AND MEANS

Gilbert B. Teague, 2111 W. 44th, Tulsa, Okla. 74104

Filed Apr. 23, 1973, Ser. No. 353,595
Int. Cl. B21h 1/14
U.S. Cl. 72—89 6 Claims



1. A ball sprue swage device for use in combination with a flat substantially rigid surface and comprising a cylindrical body having a flat face at one end thereof, a sleeve member carried by the said body and extending around the outer periphery of the said body to form a wall around the outer periphery of the flat face, the depth of said wall being substantially equal to the diameter of the ball to be swaged, a ball retainer ring having a thickness less than the depth of the wall of the sleeve member and having an outer diameter less than the inner diameter of the sleeve member whereby the balls having sprues thereon may be placed within the retainer ring

on the rigid surface, the body and sleeve member being placed over the retainer ring and balls, the said device being moved in a revolving circular pattern thereby causing the said balls to be rounded and the sprues thereon removed.

3,847,001

DEVICE FOR CONICAL TAPERING OF TUBES OF CIRCULAR CROSS SECTION

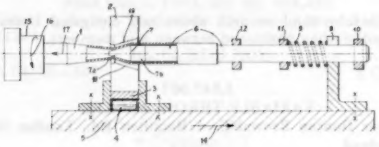
Eberhard Thamasett, Reutti, Germany, assignor to Wieland-Werke AG, Ulm, Germany

Filed Apr. 6, 1973, Ser. No. 348,760

Claims priority, application Germany, Apr. 12, 1972, 2217505

Int. Cl. B21d *51/10*

U.S. Cl. 72—96 **8 Claims**



1. In a mandrel support device for providing a conical taper on a tube having a circular cross section during a simultaneously occurring continuous rotation of said tube about a longitudinal axis and an axial feed thereof, a pair of tools arranged in one plane perpendicular to said longitudinal axis and which can be fed radially of said longitudinal axis, at least one of said tools being composed of two operating surfaces which are fixedly connected with one another and defining an angle with said longitudinal axis of said tool, means defining a mandrel having guide means which is adjustable together with said tools relative to said tubes in said axial direction and supports said mandrel for movement with respect to said tools, said mandrel having an approximately conically tapered end at its free end located between said tools, the improvement comprising resilient means connected between said guide means and said mandrel for resiliently urging said mandrel toward said operating surfaces, said resilient means providing the only force for urging said mandrel toward said operating surfaces.

3,847,002

METHOD OF PRODUCING STEEL WIRE AND STRAND FOR PRE-STRESSED CONCRETE CONSTRUCTION

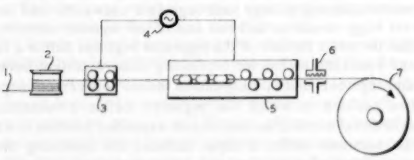
Akira Suzuki, Chibashi; Masaki Hagiwara, and Nobuhiro Teraoka, both of Tokyo, all of Japan, assignors to Suzuke Metal Industry Co., Ltd., Kitaku, Japan

Filed Dec. 29, 1972, Ser. No. 319,712

Claims priority, application Japan, June 13, 1972, 47-58177

Int. Cl. B21f *9/00*

U.S. Cl. 72—128 **7 Claims**



1. A method of producing steel wire and strand for pre-stressed concrete construction, having low relaxation value and excellent straightness, which comprises the steps of applying, in the ordinary low-temperature annealing range of 300° – 400°C, to cold drawn steel wire and strand composed thereof, containing 0.6 – 0.9 percent of carbon, a tension corresponding to 10 – 50 percent of the tensile strength of the cold drawn wire at room temperature and, simultaneously applying a bending stress so as to give 0.1 – 0.5 percent maximum surface strain.

3,847,003

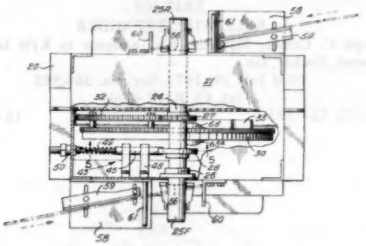
APPARATUS FOR PRODUCING PIGTAILS ON HANGER WIRES

Otto W. Schaefer, 2838 Alan-A-Dale, Irving, Tex. 75061

Filed Apr. 1, 1974, Ser. No. 456,893

Int. Cl. B21f *3/027*

U.S. Cl. 72—134 **9 Claims**



1. Apparatus for producing hanger wires comprising a frame;

a rotatable shaft supported on said frame, having a cylindrical mandrel at one end provided with a diametral slot opening to its distal end; index means acting on said shaft for indexing said shaft, in the rest position, with the mandrel slot oriented in a preselected position; drive means for driving said shaft intermittently through selected numbers of revolutions;

guide means on said frame for guiding an elongated wire segment longitudinally into said mandrel slot transversely of said mandrel; stop means on said frame for limiting the longitudinal movement of said wire segment beyond said mandrel slot;

stripper means for stripping the hanger wire axially from said mandrel; and actuator means for effecting operation of said stripper means by said shaft drive means in timed relation with the intermittent drive of said shaft.

3,847,004

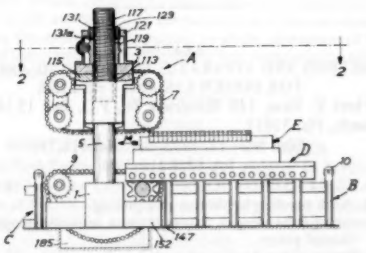
APPARATUS AND METHOD FOR APPLYING PRESSURE AND DIE AND METHOD FOR FORMING A PART

August R. Bringewald, Dix Hills, N.Y., assignor to Bringewald Process Corporation, Huntington, N.Y.

Filed Mar. 25, 1971, Ser. No. 128,085

Int. Cl. B21j *13/02*

U.S. Cl. 72—184 **14 Claims**



1. The combination comprising a pressure base, pressure means vertically spaced above said pressure base to define a

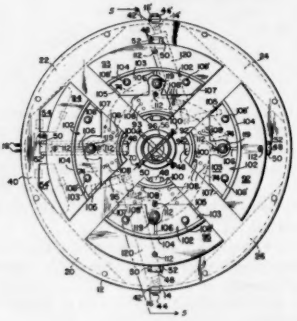
pressure zone, means for coveying work between said pressure base and said pressure means, one of the pressure base and said pressure means being inwardly inclined in the direction said work is conveyed so that pressure is gradually applied to said work, rollers for converting sliding friction into rolling friction as said work passes through said pressure zone, means for guiding said rollers as they pass under said pressure means, an auxiliary pressure unit adjustably mounted on said pressure means, and means for adjusting said guide means to compensate for movement between said pressure means and said auxiliary pressure unit.

3,847,005

BELL WIRE EXPANDER

Joseph C. Criner, Marietta, Ga., assignor to Kyle Incorporated, Tucker, Ga.

Filed July 19, 1973, Ser. No. 380,595
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 **16 Claims**



1. Apparatus for expanding a cylindrical body, comprising a plurality of shoes for engaging the inside surface of said body, said shoes being mounted on shoe mounting means, said shoe mounting means having a plurality of attachment means spaced at different radial positions to receive shoes of different sizes and secure said shoes of different sizes at different radial positions, whereby said apparatus may be adjusted to expand cylindrical bodies of different diameters, and driving means for moving said shoe mounting means outwardly to cause said shoes mounted on said shoe mounting means to expand a cylindrical body positioned about said apparatus.

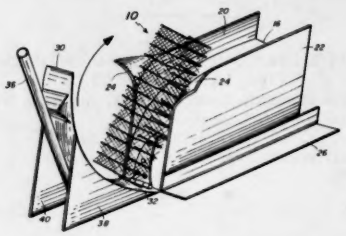
3,847,006

METHOD AND APPARATUS FOR BENDING ARCHES FOR DOORWAYS AND THE LIKE

Herbert E. Rose, 140 Mandrake St., P.O. Box 15,105, Orlando, Fla. 32811

Filed Nov. 12, 1973, Ser. No. 414,796
Int. Cl. B21d *7/06*
U.S. Cl. 72—375 **10 Claims**

1. Arch bending apparatus comprising:
means for bending a flat workpiece into an elongated U-shaped piece;
a first member having a beveled surface;
a second member having a surface corresponding to said beveled surface of said first member and adapted to mate therewith; and
means for moving said beveled surface of said second member against said beveled surface of said first member to



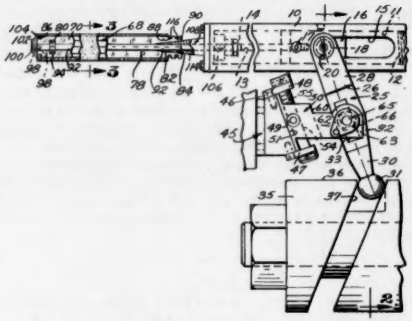
thereby bend an arch about said elongated U-shaped piece when positioned between said members.

3,847,007

VARIABLE THROW ROCKER

Thomas Duncan Brownbill, 4 Hamilton Rd., London N77, England

Continuation-in-part of Ser. No. 168,581, Aug. 3, 1971, abandoned. This application June 14, 1973, Ser. No. 369,880
Claims priority, application Great Britain, Aug. 11, 1970, 38663/70
Int. Cl. B21d *41/02*
U.S. Cl. 72—393 **8 Claims**



1. Actuating means for a mandrel assembly of the type having a plurality of discreet longitudinal segments which together constitute a segment assembly to define a generally cylindrical mandrel surface, hinge means provided towards one end of said assembly to permit each of said segments to hinge radially outwardly of the longitudinal axis of said cylindrical surface at least towards one end thereof, expansion means adapted to urge said segments outwardly and about said hinge means at said one end of the segment assembly so that the outer surface of the segments together define a taper and operating means for producing relative motion between said segments and said expansion means between an inoperative position in which the segments define a substantially cylindrical mandrel surface and an expanded position in which the segments define a taper surface, the operating means comprising a longitudinal rod adapted to draw said segment assembly onto said expansion means, said actuating means comprising: a rocker arm adapted to drive the rod, said arm having a first part and a second part, said first part being coupled to the rod and being adapted in response to actuation of said arm to execute a linear reciprocating motion from a datum position at an extremity of said motion; floating ful-

crum means for said arm disposed intermediate said first and said second parts; and adjustment means for varying the position of said fulcrum with respect to the datum position of said first part and in a plane containing or parallel to the datum position of said first part and said second part of said arm, whereby the throw of the longitudinal rod can be varied by operation of said adjustment means while maintaining said one extremity of said motion of said first part and the rod connected thereto in said datum position for varying the taper imparted to the segment assembly in its expanded position.

3,847,008

HYDRAULIC FORGING PRESS

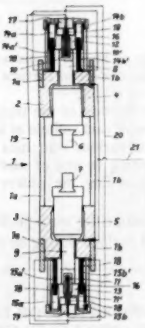
Heinz Schmoll, Huckeswagen, and Helmut Robra, Mulheim/-Ruhr, both of Germany, assignors to Schloemann Aktiengesellschaft, Dusseldorf, Germany

Filed May 2, 1973, Ser. No. 356,452

Claims priority, application Germany, May 2, 1972, 2221341

Int. Cl. B21d 7/06

U.S. Cl. 72—407 **5 Claims**



1. A horizontal hydraulic forging press comprising:

a press frame;

counter-acting first and second forging pistons, each said piston defining a step and having a rearwardly-extending shank;

forging tool holding means mounted on each of said forging pistons;

respective cylinders receiving said forging pistons, said steps being within respective said cylinders and said shanks projecting rearwardly out of respective said cylinders;

retraction means for retracting said forging pistons after a forging stroke;

at least two coupling piston-cylinder units connected to each said shank, at least one of said piston-cylinder units having a cylinder volume which increases with progressive motion of said shank in the forging direction and at least another one of said piston-cylinder units having a cylinder volume which decreases with progressive motion of said shank in the forging direction; and

duct means intercommunicating the at least one coupling piston-cylinder unit which is connected to said first forging piston and has said increasing cylinder volume with the at least one coupling piston-cylinder unit which is connected to said second forging piston and has said decreasing cylinder volume, and also intercommunicating the at least one coupling piston-cylinder unit which is connected to said second forging piston and has said increasing cylinder volume with the at least one coupling piston-cylinder unit which is connected to said first forging piston and has said decreasing cylinder volume, whereby said coupling piston-cylinder units couple together the forging movements of said forging pistons.

3,847,009

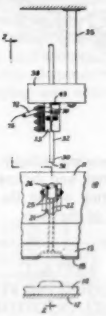
SAFE KNOCKOUT ARRANGEMENT FOR POWER PRESS

Henry R. Wiersma, Palos Heights, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Jan. 24, 1974, Ser. No. 436,033

Int. Cl. B21d 45/00

U.S. Cl. 72—427 **6 Claims**



1. In a power press the combination comprising a slide, a bolster, cooperating upper and lower dies on the slide and bolster and so constructed that the workpiece tends to cling to the upper die, means for reciprocating the slide relative to the bolster, a knockout bar extending horizontally through the slide and having provision for limited movement therein in the vertical direction, a knockout pin on the knockout bar extending downwardly into engagement with the workpiece and of such length that when the workpiece is deformed by operation of the dies the pin retreats upwardly to move the knockout bar to an upraised position, a support bracket above the slide, a clamp on the support bracket, a vertically extending knockout post in said clamp, said knockout post being arranged in the path of movement of the bar so that when the slide is raised the bar strikes the post forcing the bar relatively downwardly so that the pin thereon engages the workpiece to knock it out of the upper die, the clamp being in the form of a vertically oriented split sleeve having cooperating halves, the clamp having a plurality of springs, means including a throw-off lever coupled to the springs to define an active condition and a throw-off condition, the springs being so connected to the respective halves of the clamp that in the active condition the clamp applies to the post a predetermined clamping pressure which is out of the normal control of the press operator so as to develop a sufficiently high level of friction to insure reliable knockout of the workpiece but nonetheless providing an impositive connection with the post so that in the event of axial misadjustment of the post resulting in bottoming of the bar in the slide the post is free to yield endwise avoiding creation of destructive forces, the lever having provision for movement to the throw-off condition for temporarily and simultaneously disabling the springs accompanied by slight separation of the halves of the clamp thereby to permit free readjustment of the post in the clamp.

3,847,010

SMOOTH TAPE FORMATION OF TUBES

Bretislav Paul Zuber, Montreal, Canada, assignor to Northern Electric Company Limited, Montreal, Quebec, Canada

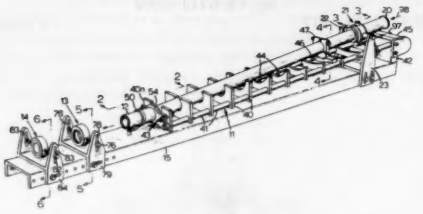
Division of Ser. No. 52,434, July 6, 1970, Pat. No. 3,738,141. This application Jan. 31, 1973, Ser. No. 328,351

Int. Cl. B21c 3/06

U.S. Cl. 72—468 **4 Claims**

1. An overlapping die assembly for forming a longitudinal seam in a tube shaped from a continuous tape, comprising an annular casing adapted to be mounted for free flotation of the

assembly on the tube, an annular retainer mounted concentrically within the casing and freely rotatable axially therein, an annular die ring mounted concentrically within the retainer and split to form a step interrupting the inner circumferentical



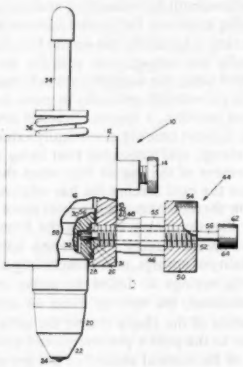
surface thereof, means bearing radially against the die ring to adjust the depth of the step, and means to urge axial rotation of the retainer and die ring within the casing in a direction outwardly from the face of the step.

3,847,011

APPARATUS FOR ADJUSTING FUEL DELIVERY IN DIESEL INJECTORS

Carl G. Errett, 1068 River Rd., Sweet Home, Oreg. 97386

Filed July 23, 1973, Ser. No. 381,867
Int. Cl. B21d *41/00*
U.S. Cl. 72—477 **6 Claims**



1. Apparatus for adjusting fuel delivery to a Diesel injector having an orifice plug and a fuel delivery orifice therethrough comprising a holder, means defining a bore through said holder, means on said holder arranged to secure it to the injector with the bore thereof in alignment with the orifice in the orifice plug, orifice enlarging means insertable into said bore arranged to engage said orifice and enlarge the latter, and peening means insertable into said bore arranged to peen one end of the orifice for reducing fuel delivery therethrough.

3,847,012

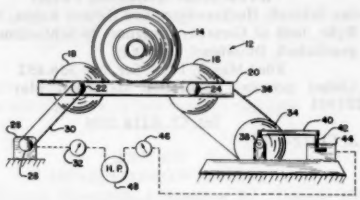
METHOD OF CONTROLLING AND MEASURING TIRE FORCES

Lawrence R. Sperberg, 6740 Fiesta Dr., El Paso, Tex. 79912

Continuation of Ser. No. 15,509, March 2, 1970, abandoned. This application Nov. 23, 1971, Ser. No. 201,587
Int. Cl. G01m *17/02*
U.S. Cl. 73—8 **12 Claims**

1. A method of measuring the work performed by a tire tread surface which is held against a moving surface while a portion of the tread compound is abraded away, comprising the steps of:

1. measuring the work performed by the tread surface of the tire as a function of vehicle power plant power output as the power plant causes the tire to rotate against a moving surface which exerts a controlled resisting force against the tire;
2. carrying out step (1) at various rotational velocities of the tire for each of a plurality of controlled resistive forces;
3. recording the vehicle power plant outputs with the work performed against the moving surface at the various velocities and controlled resistive forces to thereby provide a dictionary of stored terms which relates the work performed at the tire tread surface to the vehicle power output;
4. wearing away a portion of the tread surface by rotating the tire by means of said vehicle at a velocity corresponding to one of said various velocities and under a resistive force corresponding to one of said plurality of resistive forces, while recording the power plant output of the vehicle;
5. to thereby determine the work performed by said portion of the tire tread surface during step (4).

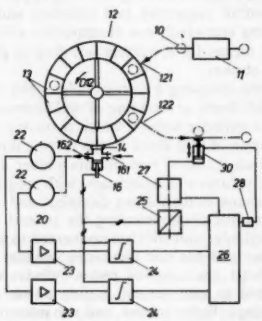


3,847,013

METHOD AND APPARATUS FOR LEAK TESTING OF FILLED-UP AND CLOSED CONTAINERS

Hasso Luy, 2359 Henstedt Ulzburg 3, Am Heidberg 18b, Germany

Filed Oct. 11, 1972, Ser. No. 296,590
Claims priority, application Germany, Oct. 14, 1971, 2151211
Int. Cl. G01m *3/16*
U.S. Cl. 73—40.7 **12 Claims**



1. The method of testing filled-up and closed containers for leakage of a particular gas, particularly aerosol cans containing propellent gas, comprising the following steps: a) introducing pre-sealed containers with a particular gas under pressure therein one after another at an inlet station respectively into

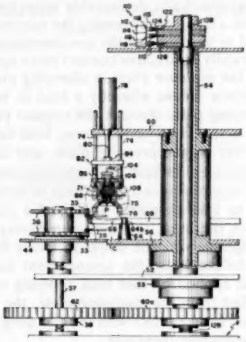
continuously moving separate chambers; b) thereafter hermetically closing and scavenging said chambers successively with a gas other than that to be tested; c) moving said chambers and said containers sealed therein along a predetermined length of path between said inlet station and an outlet station; d) removing gas samples of predetermined volume successively out of each hermetically closed chamber upstream of said outlet station; e) feeding said sample to a detector generating a signal correlated to the quantity of particular gas detected; f) storing at least said signals surpassing a threshold value correlated to respective leaky containers; g) discharging said containers from said chambers at said outlet station; h) thereafter removing only said respective leaky containers in dependency upon the correlated stored signals surpassing the threshold value; i) and thereafter extinguishing the stored signals.

3,847,014

ENCLOSURE LEAK TESTER AND METHOD

Robert J. Mistarz, North Brook, Ill., assignor to Koehring Company, Milwaukee, Wis.

Filed Nov. 13, 1972, Ser. No. 306,330
Int. Cl. G01m *3/34*
U.S. Cl. 73—49.3 **21 Claims**



1. A method of leak testing a fluid-filled, resilient container having a resiliently flexible container cap sealing said container comprising the steps of:

deforming a portion of the container and said cap inwardly of said container to decrease the volumetric capacity of the container and increase the pressure in the container so that fluid in the container will be forced through any unsealed openings in the container;

releasing the deforming force on said cap to permit the cap to return to its undeformed position while maintaining the deforming force on said portion of said container; and

sensing whether or not the cap returns to its undeformed position.

3,847,015

DISPLACEMENT MEASURING AND RECORDING APPARATUS

Albert Joseph Blatter, 14 Kelsey Pl., Bloomfield, Conn. 06095

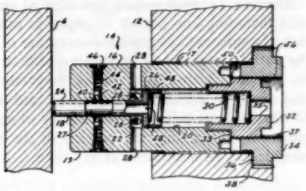
Filed Mar. 13, 1972, Ser. No. 234,286
Int. Cl. G01n *29/00*
U.S. Cl. 73—70 **5 Claims**

1. Apparatus for measuring and recording the amplitude of the relative movement between a first object and a second object spatially disposed with respect to the first object comprising:

a. a housing attached to said first object and having a continuous passage therethrough defined by a first bore section and a second bore section larger in cross section than said first bore section, the transition between said first and second bores defining a shoulder interior of said housing, said housing having a second passageway generally perpendicular to said first passageway and extending from an outside wall thereof to the interior of said first bore section;

b. a follower member slidably positioned in and extending through said first bore section, said follower having a first end extending from said housing to engage said second object, the other end of said follower terminating within said second bore section and having an enlarged portion thereof to engage said shoulder;

c. a first spring means disposed within said second bore section and engaging said enlarged portion of said follower member for urging said follower into engagement with said second object;



d. removable retaining means disposed in the end of said housing containing said second bore section to confine said first spring means within said bore;

e. scribe means slidably positioned within said second passageway having a pointed end directed toward the interior of said housing to engage a side of said follower member, said means being made from a material harder than that from which said follower is made; and

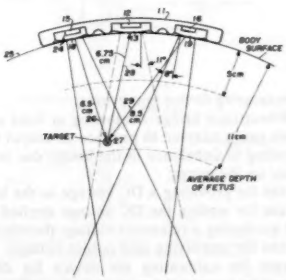
f. a second spring means disposed within said second passageway for urging the pointed end of said marker into engagement with said follower.

3,847,016

ULTRASONIC TRANSDUCER ASSEMBLY

Janis Gunars Ziedonis, Cranbury, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Dec. 8, 1971, Ser. No. 206,012
Int. Cl. G01n *29/00*; **A61b** *10/00*
U.S. Cl. 73—71.5 U **10 Claims**



1. An ultrasonic multiple element transducer assembly for use particularly in patient monitoring, comprising:

a. A base of substantially flattened cloverleaf type configuration and homogeneous, flexible material composition, having a center area with at least three arms extending outwardly therefrom, the arrangement of each of said arms being such as to be independently flexible relative to each other and to the center area with each arm having proximate said center area narrower width and thickness dimensions than the outer arm area and said center area, for enabling the assembly to conform to varying body curvatures, said base being constructed so as to virtually eliminate cross-coupling of ultrasonic energy therethrough between the center area and the arms;

b. ultrasonic transmitter means provided proximate the free end of each of said arms, said transmitter means being arranged and including lens means for providing overlapping direct beam illumination of a predetermined volume of the interior of the patient's body intended to be monitored; and

c. ultrasonic receiver means provided at said center area and including lens means arranged to provide illumination of a substantially greater percentage of the portion of the patient intended to be monitored than that provided by the said transmitter means associated with any of said arms, for enabling detection by said receiver means of ultrasonic energy from whichever of said transmitter means is illuminating the portion of the patient's body intended to be monitored at any time.

3,847,017

STRAIN MEASURING SYSTEM

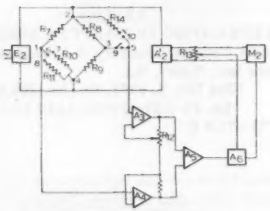
Jack Watts, Whitley Bay, England, assignor to Welwyn Electric Limited, Bedlington, England

Filed Feb. 21, 1973, Ser. No. 334,253

Claims priority, application Great Britain, Mar. 20, 1972, 12824/72; Mar. 24, 1972, 14070/72

Int. Cl. G01b *7/16*

U.S. Cl. 73—88.5 R **9 Claims**



1. A measuring device comprising:

a. a Wheatstone bridge containing at least one resistance strain gauge adapted to produce an output voltage corresponding to unbalance in the bridge due to the effect of strain on the gauge;

b. means for providing a DC voltage to the bridge;

c. means for sensing the DC voltage applied to the bridge and producing a reference voltage therefrom;

d. means for amplifying said output voltage;

e. means for calibrating the device for different strain gauges by varying the gain in said amplifying means;

f. means for indicating the ratio between the output voltage and the reference voltage; and

g. means for compensating for bridge unbalance by summing the output voltage and a balance voltage derived from said reference voltage.

3,847,018

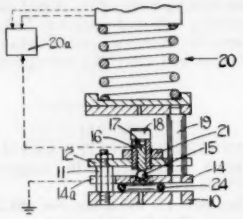
APPARATUS FOR TESTING THE DEFORMATION UNDER LOAD OF RUBBER OR OTHER ELASTICALLY DEFORMABLE MATERIALS

Michael William Aston, Solihull, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed July 10, 1973, Ser. No. 377,916

Int. Cl. G01n *3/08*

U.S. Cl. 73—94 **9 Claims**



1. Apparatus for testing the deformation under load of rubber or other elastically deformable materials, comprising, in combination, a base for supporting the specimen, a pressure plate arranged to bear against the specimen supported on the base, an electrically conductive contact piece upstanding from the centre of the pressure plate, a clamping plate connected to the base, screw means whereby a load is, in use, applied from the clamping plate through the contact piece and pressure plate to a specimen on the base, load applying means arranged to bear on the pressure plate, and load measuring apparatus connected to said load applying means, the said screw means comprising a bush which is axially adjustable with respect to said clamping plate and a plug threadedly engaged within the bush, the said plug having an abutment which is engageable with the sleeve to locate the plug axially with respect to the bush, the arrangement being such that when the load applied by said load applying means exceeds the load applied from the clamping plate, the contact piece will be removed from contact with the clamping plate to break an electric connection therewith.

3,847,019

ENGINE OUTPUT MEASURING DEVICE

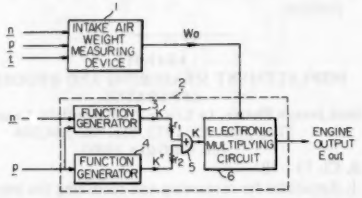
Kenji Masaki, and Shigeo Aono, both of Yokohama, Japan, assignors to Nissan Motor Company, Limited, Yokohama City, Japan

Filed May 25, 1973, Ser. No. 363,899

Claims priority, application Japan, May 26, 1972, 47-52345

Int. Cl. G01m *15/00*

U.S. Cl. 73—117.3 **4 Claims**



1. An electronic device for electronically measuring an output of an engine with an intake manifold having an engine speed sensor responsive to engine speed to produce an electrical engine speed analog signal representing prevailing value of

engine speed, an intake manifold vacuum sensor responsive to intake manifold vacuum to produce an electrical intake manifold vacuum analog signal representing prevailing value of intake manifold vacuum, and an intake air weight measuring device for electronically measuring the weight of intake air drawn into the engine to produce an electrical functional signal representing the weight of intake air, comprising:

first electronic computing means responsive to said electrical analog signals from the engine speed sensor and the intake manifold vacuum sensor to produce an electrical functional signal representing a proportional constant dependent on the weight of intake air and the output of the engine; and

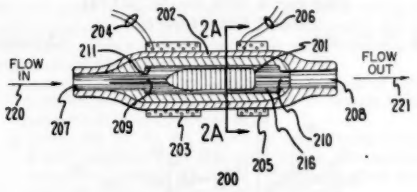
second electronic computing means for multiplying said electrical functional signal from said first computing means by said electrical functional signal from the intake air weight measuring device to thereby produce an electrical output signal proportional to the variation of the engine output.

3,847,020

FLOW METER

John Jurschak, 825 Casozza Dr., Reno, Nev. 89502

Filed Jan. 26, 1973, Ser. No. 327,079
Int. Cl. G01f 1/00
U.S. Cl. 73—228 **11 Claims**



1. A flow meter comprising:

a solenoidal transducer for installation in a conduit in which flow occurs in a predetermined direction from upstream to downstream, said transducer including a substantially non-magnetic housing defining an elongated chamber, at least a proportionate amount of said flow being through said chamber, a magnetically responsive armature disposed in said chamber for reciprocating movement in line with the chamber flow, dynamic forces being exerted on said armature as a result of its interaction with said chamber flow, said chamber including mechanical means to limit armature movement in at least the downstream direction, inductive coil means disposed adjacent said chamber and including said armature in the magnetic circuit thereof for applying a force thereon effective to urge said armature in the direction opposite of said chamber flow, armature movement causing a parametric change in said coil means;

means electrically coupled to said coil means for alternately energizing and de-energizing said transducer, thereby producing reciprocation of said armature;

measurement means electrically coupled to said coil means for providing a signal proportional to the currents thereof, and,

sensing means for providing a signal manifesting said parametric changes; and

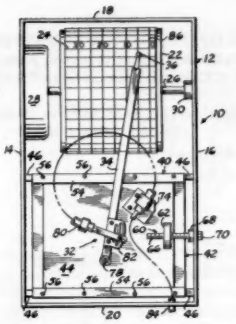
computing means responsive to said coil current and parametric change signals wherefrom the rate of flow in said conduit is obtained.

3,847,021

RECORDER SLIDING BASE ASSEMBLY

Calvin R. Howeth, P.O. Box 94262, Oklahoma City, Okla. 73109

Filed July 27, 1973, Ser. No. 383,423
Int. Cl. G01l 7/04
U.S. Cl. 73—418 **4 Claims**



1. A Bourdon tube mounting apparatus, comprising:

a stationary base,

said base having a coextensive socket formed in opposing marginal edge portions in aligned cooperative confronting relation;

a slider panel overlying said base and having opposing marginal edge portions nested by the base sockets for sliding movement of said slider panel relative to said base,

said slider panel having a plurality of spaced-apart bores for connection with and supporting a Bourdon tube; and,

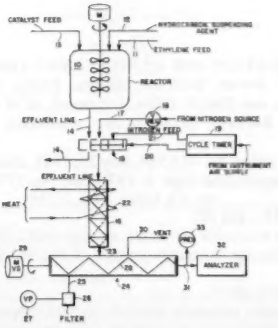
slider panel moving means including a block, having a threaded aperture, secured to a marginal edge portion of said slider panel for receiving one end portion of an axially stationary revoluble shaft.

3,847,022

SLURRY SAMPLER FOR POLYMER SEPARATION

Floyd H. McGinnis, Broken Arrow, Okla., assignor to Seismograph Service Corporation, Tulsa, Okla.

Filed May 29, 1973, Ser. No. 364,594
Int. Cl. G01n 1/10
U.S. Cl. 73—421 R **10 Claims**



1. A system for extracting solid particles from a slurry comprising:

a heat exchanger for volatilizing the slurry suspending agent;

means for compressing the solid particles having an evacuated interior for removing volatilized materials therefrom; and

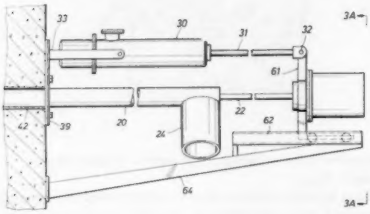
means for flushing the volatilized slurry through the heat exchanger and into the compressing means.

3,847,023

SAMPLING DEVICE AND SYSTEM

Richard G. Mallander, Wheatridge, and John H. Lake, Lakewood, both of Colo., assignors to Shell Oil Company, Houston, Tex.

Filed May 21, 1973, Ser. No. 362,623
Int. Cl. G01n *1/16*
U.S. Cl. 73—423 R **4 Claims**



1. A sampling device for solid material in an aggregate form comprising, in combination:

a guide sleeve having one end open and having a conduit from said guide sleeve near the other end, the conduit being in a plane substantially perpendicular to the longitudinal axis of the guide sleeve;

a sample-withdrawing auger rotatably mounted within the guide sleeve and adapted to move longitudinally with respect to the guide sleeve, the auger having a shaft portion extending from one end thereof, the other end of the auger being positioned in and extendible from the open end of the guide sleeve to pull material into the sleeve;

first means connected to the shaft portion of said auger for rotating the auger; and

second means for moving said auger longitudinally in two directions into and out of contact with the aggregate material being sampled, said second means being connected to said first means.

3,847,024

SIMULATION AND MEASUREMENT APPARATUS

Elmer R. Beever, Hacienda Heights; Rindge Shima, Santa Monica, and Paul P. Zebus, Lakewood, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 843,944, July 23, 1969, abandoned. This application Sept. 1, 1971, Ser. No. 177,146
Int. Cl. G01n *1/00, 21/48*
U.S. Cl. 73—432 SD **5 Claims**

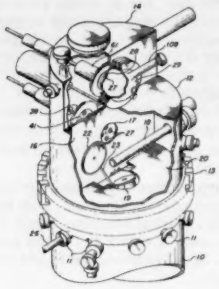
1. In an evacuable simulator, an improved transport mechanism within the evacuable portion of the simulator comprising:

a support wheel;

a specimen mounting member on said support wheel, said specimen mounting member including means for mounting a plurality of separate specimens;

means for measuring the temperature of each of said specimens; and

means for moving said support wheel for transferring said specimen mounting member between a simulation station



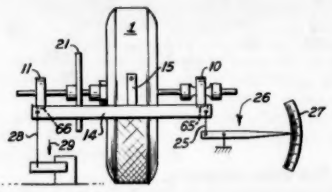
within the evacuable portion of the simulator and a measurement station also within the evacuable portion of the simulator.

3,847,025

DYNAMIC TIRE BALANCING METHOD AND APPARATUS

Richard M. Hultberg, 11 Boulevard de Empereur, Brussels, Belgium (1000)

Filed Apr. 4, 1973, Ser. No. 347,741
Int. Cl. G01m *1/04, 1/16*
U.S. Cl. 73—460 **12 Claims**



1. A method of determining the dynamic imbalance of a wheel comprising the steps of;

mounting said wheel for rotation about its center,

suspending said wheel from a support means which is pivotally mounted about an axis which is parallel to a face of said wheel,

rotating said wheel about its center,

measuring the pivotal displacement of said support means which displacement is due to the dynamic imbalance of said wheel being rotated,

successively placing a pair of weights of known value at three different pairs of locations about the periphery of said wheel, said pairs of locations being spaced 120° from each other, and after each such placement rotating said wheel about its center and measuring the total pivotal displacement of said support means which total displacement is due to the rotational imbalance of said wheel and the imbalance produced by each pair of weights,

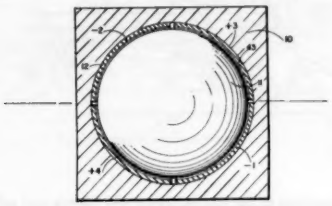
determining the theoretical displacement of said support means due to the imbalance of said wheel which is caused by a pair of said known weights acting by itself,

and deriving from said theoretical displacement and said known value of said weights the proper balancing weight and proper location necessary to compensate for said rotational imbalance.

3,847,026
CROSS PRODUCT PICKOFF FOR BALL GYROS OF THE ELECTROSTATIC LEVITATION TYPE

Joseph C. Boltinghouse, Whittier; Frank M. Pelteson, Santa Ana, and John C. Pinson, Anaheim, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Nov. 12, 1970, Ser. No. 88,776
Int. Cl. G06c *19/08*
U.S. Cl. 74—5.6 D **10 Claims**



1. In combination with a pickoff system for an electrostatic gyroscope of the type wherein there is provided, a case, a set of at least six electrodes in symmetrical array with respect to the case, a ball adpted to spin about a spin axis within the electrode array with the ball constructed and arranged to have its center of mass displaced laterally from the spin axis so that the ball orbits at the spin frequency with circuit means for establishing electrical fields between the electrodes and the ball, which fields are modulated at the spin frequency, the improvement which comprises:

a. means **11, 14, 30** for detecting the modulated fields between the electrodes and said ball to provide signals proportinal to said detected fields;

b. means **40, 41, 42, 51, 52, 53** for transforming the detected modulated field signals into signals representing a modulated field resolved into components along three mutually orthogonal axes;

c. reference carrier signal generating means (**90, 91, 92,** 111) for generating a first reference signal which is substantially proportional to the spin frequency of said ball and a second reference signal which is displaced in time phase quadrature relative to said first reference signal;

d. first demodulator means for demodulating each of said mutually orthogonal signal components with respect to said first generated carrier signal;

e. second demodulator means for demodulating each of said mutually orthogonal signal components with respect to said second generated carrier signal; and

f. means (**70, 71, 72, 73, 74, 75, 80, 81, 82**) for combining the demodulated signals from said first and said second demodulator in vector cross-product relationship to form signals proportional to the direction cosines of said spin axis which combined signals define the orientation of said spin axis with respect to said electrode array.

3,847,027
SPEED CONTROL MECHANISM

David C. Bailey, Woodbridge, Va., assignor to General Electric Company, Syracuse, N.Y.

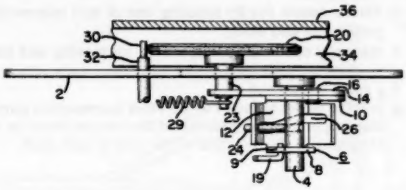
Filed Nov. 1, 1972, Ser. No. 302,646
Int. Cl. F16h *15/08, 15/46*
U.S. Cl. 74—190 **21 Claims**

1. A speed control mechanism comprising:

a base plate;

stationary mounting post means rigidly affixed to said base plate;

a rotatable member mounted on said mounting post means so as to be rotatable thereabout, said member being slideable along the longitudinal axis of said mounting post means, said mounting post means including means engaging said rotatable member so as to urge said rotatable member along the longitudinal axis of said mounting post means in response to rotational movement of said rotatable member and in a direction determined by the direction of rotation of said rotatable member;



a connecting member pivoted about said rotatable member at a location radially removed from said mounting post;

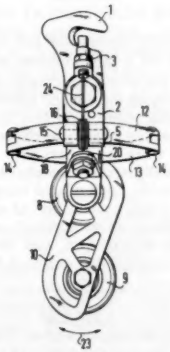
a driving shaft including a plurality of driving radii; and

a wheel rotatably mounted on said connecting member with its axis substantially perpendicular thereto, said driving shaft being engaged on a different one of said driving radii, respectively, by said wheel when said rotatable member is rotated from a first predetermined position to a second predetermined position.

3,847,028
LEAF SPRING BIASED DERAILLEUR ARRANGEMENT

Eduard Bergles, Graz, Austria, assignor to Fichtel & Sachs AG, Schweinfurt, Germany

Filed Feb. 20, 1974, Ser. No. 444,094
Claims priority, application Germany, Mar. 23, 1973, 2314555
Int. Cl. F16h *11/00, 11/08*
U.S. Cl. 74—217 B **8 Claims**



1. A variable-speed transmission arrangement comprising, in combination:

a. a shaft having an axis;

b. a plurality of sprocket wheels mounted on said shaft for rotation about said axis,

1 said wheels decreasing in diameter in axial sequence and jointly defining a conical enveloping surface having a generatrix obliquely inclined relative to said axis;

c. elliptic spring means including two elongated leaf springs having each a first and a second terminal portion, and two hinge means respectively connecting said first terminal

portions and said second terminal portions for relative pivotal movement of the connected terminal portions about a first pivot axis and a second pivot axis,

1. said pivot axes being spaced from each other in the direction of elongation of said leaf springs and jointly defining a plane perpendicular to said generatrix,
2. said leaf springs having respective longitudinally intermediate portions spaced from said plane in opposite directions;

d. carrier means fixedly securing one of said intermediate portions to said shaft;

e. manually operable moving means for moving said intermediate portions toward and away from each other;

f. a guide wheel; and

g. bracket means fastened to the other intermediate portion and supporting said guide wheel for rotation about an axis extending in the direction of the axis of said shaft.

3,847,029

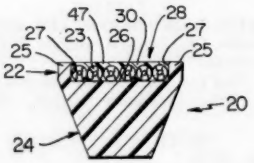
ENDLESS POWER TRANSMISSION BELT AND METHOD OF MAKING SAME

Robert L. Ray, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Filed Dec. 11, 1972, Ser. No. 314,058

Int. Cl. F16g *5/16*

U.S. Cl. 74—233 **7 Claims**



1. An endless power transmission belt comprising the body made substantially of a thermoplastic polyester elastomer, said body having a pair of spaced integral projections provided at opposite side portions thereof and defining a channel in the outer surface of said body, said belt having load-carrying means integrally bonded within said channel and a heat-fused area at a location along its endless path which has physical properties substantially equal to the physical properties of the remainder of said body, each of said integral projections extending along the entire endless path of said belt and having a substantially uniform cross-sectional configuration at any location along the endless path, and each of said integral projections being heat fused at said heat-fused area.

3,847,030

APPARATUS FOR REGULATING THE DRIVE OF A PRESS OR THE LIKE

Walter Grutter, Morrens, Switzerland, assignor to J. Bobst & Fils, S.A., Switzerland

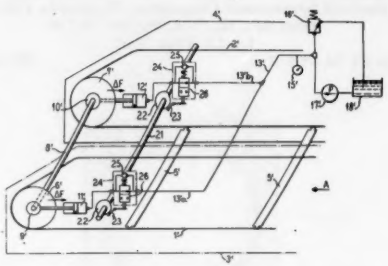
Filed Mar. 12, 1973, Ser. No. 340,059

Claims priority, application Switzerland, Mar. 14, 1972, 3719/72

Int. Cl. F16h *7/10*

U.S. Cl. 74—242.14 R **5 Claims**

1. In a platen press having a transfer chain for intermittently driving a plurality of gripper bars, means for maintaining the chain under tension comprising a source of pressurized fluid, a cylinder connected with said source, a piston slidable within said cylinder and connected with said chain to apply a force to said chain, whereby the tension of said chain is proportional to the pressure of said fluid, means for maintaining the pressure of said fluid at a predetermined level, whereby a constant minimum tension is applied to said chain, and a check valve



interconnected in the line between said source and said cylinder for preventing the rapid movement of said piston in response to a temporary increase in the tension of said chain.

3,847,031

CONNECTING LINK OF ROLLER CHAIN

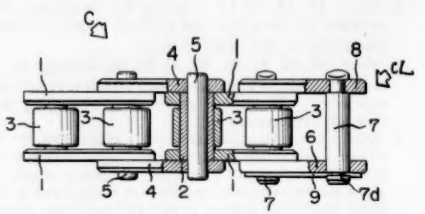
Kumakichi Araya, No. 2, Daishoji Seki-machi, Kaga-shi, Ishikawa-ken, Japan

Filed June 5, 1973, Ser. No. 367,129

Claims priority, application Japan, June 16, 1972, 47-59399; Sept. 25, 1972, 47-95226; Sept. 28, 1972, 47-96631

Int. Cl. F16g *13/02*

U.S. Cl. 74—258 **5 Claims**



1. A connecting link of roller chain, comprising a pair of link plates for connecting both ends of a length of chain, one link plate of said pair of said link plates having a pair of connecting pins integrally secured thereon adjacent to both ends of said one link plate, the other link plate fitted over said connecting pins adjacent to free ends thereof, and locking means of resilient material such as plastic resin or rubber placed outwardly on said other link plate and having a pair of openings snapped over said pair of said connecting pins adjacent to free ends thereof.

3,847,032

TORQUE EQUALIZING DRIVE

Harold Bob Moser, 7301 Dale Ct., Westminster, Colo. 80030

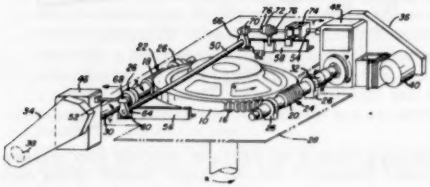
Continuation of Ser. No. 252,283, May 11, 1972, abandoned. This application June 20, 1973, Ser. No. 372,491

Int. Cl. F16h *1/16, 35/06, 37/06*

U.S. Cl. 74—427 **10 Claims**

1. A torque equalizing device for use in a multiple drive mechanism which rotates a main shaft by a plurality of gear worms being in driving engagement with a worm wheel secured to said main shaft, comprising: a driving motor assembly provided for each gear worm and supported on a drive shaft

of each of said gear worms to impart driving torque thereto independently of other of said gear worms; each of said motor assemblies having a driving connection with a respective one of said drive shafts for producing a limited rotating movement of said assembly in reaction to the imparted torque; a mechanical linkage connected to each motor assembly and operable to convert said rotating movement to a lineal thrusting force; and reaction arm means interconnecting the linkages of a plurality of motor assemblies to equalize the torque of the gear worms by rotation of respective motor assemblies.

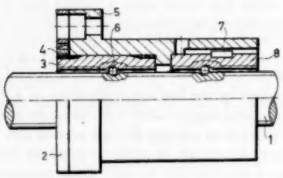


3,847,033

METHOD AND CONSTRUCTION FOR INCREASING THE SERVICE LIFE OF ROLLING SCREW MECHANISM WITH DOUBLE-NUT PRESTRESS

Ivan Toth, Budapest, Hungary, assignor to Csepeli Szerszamgepgyar, Budapest, Hungary

Filed May 14, 1973, Ser. No. 360,179
Claims priority, application Hungary, July 13, 1972, 10986
Int. Cl. F16h *55/04, 55/18*
U.S. Cl. 74—459 **8 Claims**



1. A method of operating a roller-spindle mechanism comprising an externally threaded spindle, a pair of nuts mounted on said spindle and each formed with a helical thread having oppositely facing flanks, and a multiplicity of roller elements received between the threads of said nuts and said spindle, said method comprising the steps of:

relatively rotating said nuts to stress the roller elements against the flanks of the nut thread of one nut facing in one direction and the flank of the other nut thread facing in the opposite direction;

driving said mechanism until the stressed flanks of said nut threads are worn; and

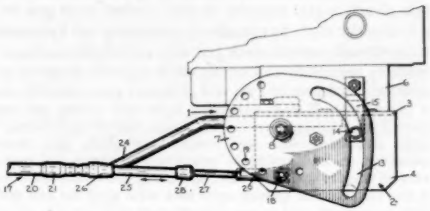
displacing one of said nuts to cause said roller elements to be stressed against the previously unstressed flank of each nut thread for further driving of the mechanism for a doubling of the essential life of said nut threads.

3,847,034

CONTROL DEVICES

James Frederick Hemens, Billericay, England, assignor to Teleflex Limited, Essex, England

Filed Apr. 30, 1973, Ser. No. 355,913
Claims priority, application Great Britain, Nov. 20, 1972, 53606/72
Int. Cl. G05g *1/04*
U.S. Cl. 74—491 **5 Claims**



1. A non-linear control device responding to movement of a cable core of a push-pull cable to control a pump means through rotation of a control shaft of said pump means comprising:

a flange member fixedly attached to a housing of said pump means;

a cam plate rotatably attached to said flange member for pivotal movement thereon about an axis which is parallel with said control shaft;

said cam plate having a arcuate cam slot provided therein; said control shaft having a radially extending shaft lever with a bearing cam follower mounted on the extended end thereof;

said bearing cam follower being operatively disposed within said cam slot; and

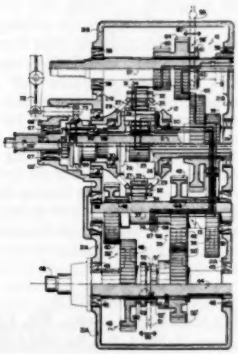
said cable core being attached to said cam plate at a point remote from said axis.

3,847,035

POWER TRANSMISSION DEVICE

Michael Stasiuk, West Fargo, N. Dak., assignor to Versatile Manufacturing Ltd., Winnipeg, Manitoba, Canada

Division of Ser. No. 241,248, April 5, 1972, Pat. No. 3,782,224. This application Oct. 9, 1973, Ser. No. 404,752
Claims priority, application Canada, Apr. 4, 1972, 138738
Int. Cl. F16h *47/04*
U.S. Cl. 74—687 **7 Claims**



1. A multiple mode transmission for mobile units such as tractors and the like which include a source of power; com-

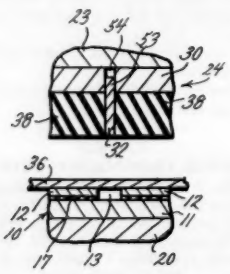
prising in combination a casing, a main drive shaft bearably supported for rotation in said casing and being selectively connectable to said source of power, a planetary gear assembly surrounding said main shaft and being bearably supported for operation upon said main shaft and within said casing, a constant mesh gear box, an hydrostatic pump operatively connected to said source of power, an hydrostatic motor operatively connected to said hydrostatic pump, means to selectively operate said transmission in a plurality of modes including a basic mechanical mode, by operatively connecting said planetary gear assembly to said constant mesh gear box, a hydrostatic mode by operatively connecting said hydrostatic motor to said constant mesh gear box, and a hydromechanical mode by operatively connecting said hydrostatic motor to said constant mesh gear box via said planetary gear assembly, and a power takeoff shaft extending from said casing and supported for rotation therein, said power takeoff shaft being in axial alignment with said main drive shaft, and means mounted on said casing to selectively connect said power takeoff shaft to said main drive shaft, said last means including a dog clutch collar splined upon said main shaft for end shiftable movement, said power takeoff shaft and one side of said collar having mutually engageable dog clutch means thereon.

3,847,036

METHOD OF PRODUCING CUTTING PLATES FOR DIE CUTTING OPERATIONS

Orville C. Miller, St. Louis, Mo., assignor to Centenary Central, Inc., St. Louis, Mo.

Filed Oct. 10, 1973, Ser. No. 405,073
Int. Cl. B21k 5/20
U.S. Cl. 76—107 C **10 Claims**



1. A method of producing a cutting and creasing plate having a counter pattern thereon for die cutting operations comprising the steps of bonding a first sheet from which the counter pattern is to be formed to a backing sheet, forming grooves in the first sheet in accordance with the desired counter pattern, which grooves extend completely through the first sheet but not completely through the backing sheet, bonding the outer surface of the first sheet to a surface of a plate after the grooves are formed, and removing the backing sheet from the first sheet and the excess of the first sheet from the plate after the second bonding step leaving those sections of the first sheet bonded to the plate which define the counter pattern to form a cutting and creasing plate.

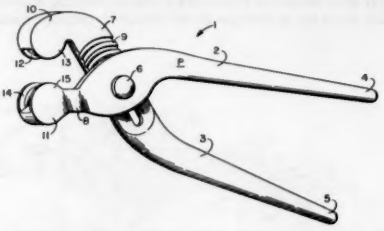
3,847,037

DUCT JOINING TOOL

Elmer E. Fox, 2149 Mildred Ave., Beloit, Wis. 53511

Filed June 25, 1973, Ser. No. 373,425
Int. Cl. B25b 7/00, 7/02
U.S. Cl. 81—5.1 R **6 Claims**

1. A duct joining tool comprising a pair of arms disposed in crossed relation, a pivot means extending through said arms at their point of crossing and connecting said arms together for relative pivotal movement, said arms including a pair of cooperating handle portions at one end and a pair of opposing work



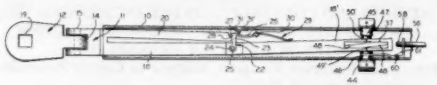
engaging portions at the other end, each said work engaging portions including a convexly shaped inwardly facing duct engaging flange connected to an end portion of each said work engaging portions.

3,847,038

AUTOMATIC RELEASE WRENCH OF THE PRESET TYPE

Talmage O. Green, Schaumberg, Ill., assignor to Snap-on Tools Corporation, Kenosha, Wis.

Continuation-in-part of Ser. No. 166,003, July 26, 1971, Pat. No. 3,763,724. This application July 18, 1973, Ser. No. 380,404
Int. Cl. B25b
U.S. Cl. 81—52.4 R **10 Claims**



1. A preset torque wrench comprising a rigid elongated tubular handle member, a pair of superposed flex beams disposed along and within said elongated tubular handle member, a work engaging head member anchored to both of said flex beams and projecting within said tubular handle member, a trigger release latch mechanism on one of said flex beams to engage the other flex beam after a partial load is impressed upon said first named flex beam to displace said trigger release latch therewith for detachable engagement with the second named flex beam so that both beams flex to carry the preset load beyond the initial load sustained alone by said first named flex beam, whereby the further application of a turning load continues until said trigger latch is deflected by an obstruction in the path thereof to release the last named flex beam from the first named flex beam in order to preclude further effective turning of the fastener by said work engaging member, and calibrated micromatic preset torque release setting means on said handle member in operative engagement with one of said flex beams to cooperate with inter-related calibrated scales on said last named flex beam to initially preset the position of said trigger release latch means relative to the obstruction in the path thereof to control the torque load release of said trigger release latch mechanism.

3,847,039

VALVE OPERATING DEVICE

Shoziro Azuma, 41, 2-chome, Soshigaya, Setagaya-ku, Tokyo, Japan

Filed Aug. 25, 1971, Ser. No. 174,636
Int. Cl. B25b , 17/00, 21/00
U.S. Cl. 81—52.4 R **2 Claims**

1. A valve operating device including: at least one valve stem rotating head having means for releasably engaging a

valve stem and for applying torque thereto in a sense to rotate the valve stem when engaged therewith;

a flexible shaft having one end connected to the valve stem rotating head for driving the same;

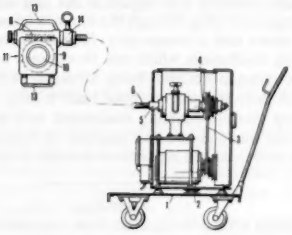
a transmission unit including a torque limiting means;

the opposite end of the flexible shaft means being connected to the transmission unit;

said transmission unit having means for accepting a rotational input and for supplying rotation to said flexible shaft via said torque limiting means, for ensuring against over-torquing of the valve stem when the valve associated therewith is being opened and becomes fully open and when that valve is being closed and becomes fully closed;

a control unit connected to said transmission unit for selectively operating said transmission unit to control rotation of said flexible shaft;

a motor for supplying said rotational input and drive shaft means connecting said motor and said transmission unit



rotational input accepting means, said motor being constituted by a motor vehicle powering motor mounted on a motor vehicle together with said transmission unit and said control unit;

a boom;

turn-table means mounting said boom, cantilever fashion, on said motor vehicle for pivoting about a generally vertical axis near one end of the boom, between a stowed condition on board the motor vehicle and an extended condition wherein the free end of the boom is spaced outwardly from the vehicle;

said valve stem rotating head being mounted on the free end of the boom;

rail means mounted on said motor vehicle; said turn-table being mounted on said wall rail means for translation therealong to increase the mobility of the valve stem rotating head.

3,847,040

TORQUE LIMIT MEANS FOR POWERED PIPE WRENCH MEANS

Stephen L. Bufkin, Houston, Tex., assignor to Brown Oil Tools, Inc., Houston, Tex.

Filed May 14, 1973, Ser. No. 360,117

Int. Cl. B25b *17/00*

U.S. Cl. 81—57.18 **8 Claims**

1. A powered pipe tong for making up and breaking out threaded connections in a pipe string without damaging the pipe, comprising:

a. support means;

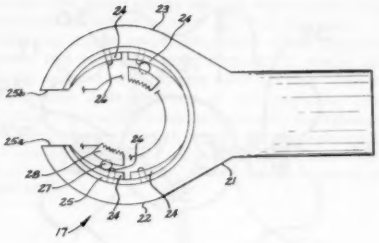
b. housing means connected to said support means and including a pair of stationary extending members spaced apart for receiving a pipe;

c. collar means rotatably mounted within said housing;

d. powering means operatively connected to said collar means for rotatably driving said collar means;

e. cam surface means carried by said rotary collar means;

f. cam follower means mounted adjacent said cam surface means for radial movement in response to relative rotational movement between said cam follower means and said rotary collar;



g. stop means selectively positionable along said cam surface means for engaging said cam follower means and selectively limiting rotation of said cam surface means relative to said cam follower means; and

h. pipe gripping means driven by said cam follower means for gripping said pipe.

3,847,041

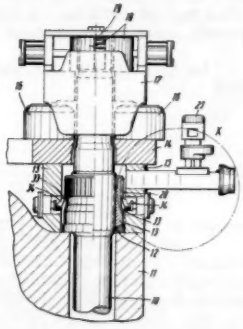
BOLT TENSIONING AND NUT THREADING ARRANGEMENT

Gunter Meschonat, and Peter Schungel, both of Dortmund, Germany, assignors to Klockner-Werke AG, Duisburg, Germany

Filed Aug. 30, 1973, Ser. No. 393,143

Int. Cl. B25b *29/02*

U.S. Cl. 81—57.38 **8 Claims**



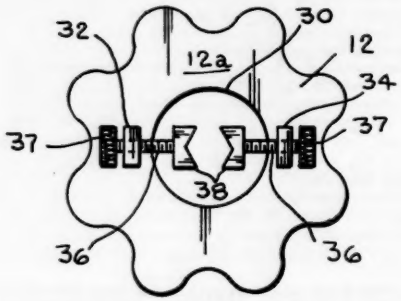
1. In an arrangement of the character described a combination comprising a vessel having a flange provided with an annulus of projecting threaded bolts; a nut threaded onto each of said bolts and having an outer periphery provided with an annulus of teeth and with an annular groove; drive means engageable with said teeth for rotating the respective nut so as to bring it into and out of mesh with the associated bolt; detent means engageable in the respective groove for holding the associated nut when the same moves towards out-of-mesh position; tensioning means for axially tensioning said bolts; and lifting means for lifting said tensioning means away from said bolts and said flange.

3,847,042

HAND STAR WRENCH

Richard D. Wilson, 7918 Windswept, Houston, Tex. 77042

Filed Jan. 5, 1973, Ser. No. 321,215
Int. Cl. B25b 13/16
U.S. Cl. 81—175 2 Claims



1. A wrench conprising:

a substantially circular wrench plate having a plurality of circumferentially spaced radially extending projections thereon, said radial projections having inwardly extending indentations for operative engagement by finger tips therewith; and,

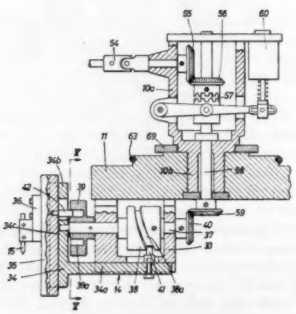
a wrench plate aperture in said wrench plate having a plurality of wrench faces formed therein for engaging a workpiece for imparting rotation to such workpiece, said wrench faces being movably mounted with respect to said wrench plate whereby the opening between said wrench faces may be adjusted for receiving and connecting to various size workpieces.

3,847,043

AUTOMATIC THREAD CUTTING MACHINE

Andre Bechler, 4, rue Centrale, 2740 Moutier, Switzerland

Filed Sept. 25, 1972, Ser. No. 292,133
Claims priority, application Switzerland, Sept. 30, 1971, 14230/71
Int. Cl. B23b 3/18, 3/26, 3/28
U.S. Cl. 82—5 1 Claim



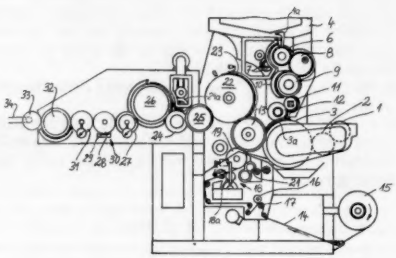
1. An automatic thread cutting machine, comprising a workpiece spindle rotatable about an axis of rotation, a tool support disk, means for rotatably indexing the tool support disk for rotation about a geometric axis which intersects at right angles the axis of rotation of the workpiece spindle, at least one thread cutting device secured to the tool support disk, a housing provided for the thread cutting device, a thread cutting tool holder guided at the housing for carrying out lengthwise movements in radial direction of the tool support disk and transverse movements in the direction of the geometric axis, a shaft mounted at the housing of the thread cutting device, said shaft carrying a cam element for controlling the lengthwise movements and a cam element for controlling the transverse movements, drive connection means between said shaft of the thread cutting device and the workpiece spindle, motor driven means for moving the tool support disk in the direction of its geometric axis, a bed, a bearing block, the tool support disk being rotatably but non-axially movably supported at the bearing block, said bearing block belonging to said motor driven means, a cross-slide carried by the bed, said bearing block being mounted at said cross-slide, a motor driven-control shaft, a cam element seated on the motor driven-control shaft for controlling movement of the cross-slide, said drive connection means between the workpiece spindle and the shaft of the thread cutting device comprises a transmission shaft mounted at the bearing block substantially coaxially with regard to the tool support disk and piercingly extending through the latter, a telescopic universal shaft means and a change-gear drive mounted at the bed, a coupling mechanism which can be engaged and disengaged, said coupling mechanism being arranged between the transmission shaft and the universal shaft means, and means for ensuring that the coupling mechanism only will be engaged when the tool support disk assumes an indexing position in which the thread cutting device is located in its work position.

3,847,044

METHOD AND APPARATUS FOR TESTING WRAPPERS OF CIGARETTES OR THE LIKE

Willy Rudszinat, Dassendorf, Germany, assignor to Hauni-Werke Korber & Co. KG, Hamburg, Germany

Filed Nov. 8, 1973, Ser. No. 413,990
Int. Cl. A24c 5/28
U.S. Cl. 83—2 14 Claims

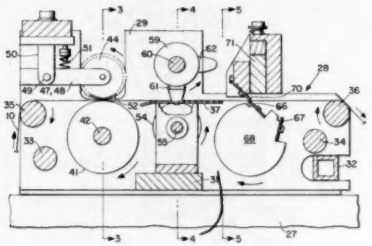


1. A method of repeatedly testing the wrappers of cigarettes or analogous articles wherein a tubular wrapper surrounds a rod-like filler of fibrous material or the like, comprising the steps of conveying a succession of articles along a predetermined path; testing the wrappers of successive articles in a first portion of the path including establishing an air pressure differential between the interior and exterior of successive wrappers and producing first test signals indicating the rate of air flow through the wrappers; perforating the wrappers of articles in a second portion of said path so that each of the thus perforated wrappers exhibits a predetermined number of holes therein; and testing successive perforated wrappers in a third portion of said path including establishing an air pressure differential between the interior and exterior of successive perforated wrappers and producing second test signals indicating the rate of air flow through the wrappers.

3,847,045
WEB PERFORATING APPARATUS

William Willhite, Jr., 6322 Elkwater Ct., Cincinnati, Ohio 45211, and Herbert Eugene Strube, 10952 Gosling Rd., Cincinnati, Ohio 45239

Filed May 25, 1973, Ser. No. 363,937
Int. Cl. B26f 1/20
U.S. Cl. 83—37 12 Claims

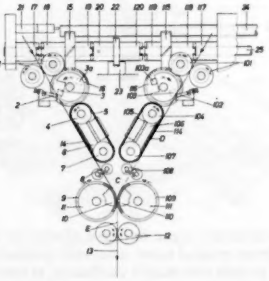


1. A web perforating apparatus comprising:
a. means for continuously supporting a web moving through said apparatus,
b. means for forming continuous spaced lines of longitudinal perforations along opposite edges of said web,
c. means for forming an elongated longitudinal slit at predetermined intervals coextensive with at least one of said lines of longitudinal perforations, and,
d. means for forming transverse perforations at spaced intervals on said web, said transverse perforations extending between said longitudinal perforations and having an elongated transverse slit whereby a succession of substantially rectangular side-by-side perforated areas are formed on said web having at least one slitted corner.

3,847,046
DEVICE FOR CUTTING CONTINUOUS WEBS

Alfred Schmermund, 62 Kornerstrasse, 5820 Gevelsberg, Germany

Filed Oct. 26, 1973, Ser. No. 410,159
Claims priority, application Great Britain, Oct. 31, 1972, 50095/72
Int. Cl. B26d 7/06, 5/20
U.S. Cl. 83—152 16 Claims

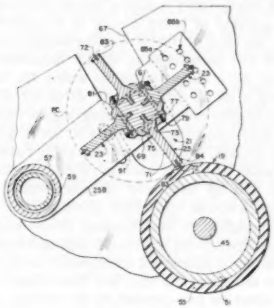


1. A device for cutting continuous webs into lengths comprising, in combination:
guide means defining two web feed paths each having a portion common to the other;
respective cutter means associated with each said feed path and each having a displaceable knife element;
respective web feeder means each selectively operable to feed a web past the respective one of said cutter means in co-ordination with the displacement of said knife element thereof;
web change-over means selectably actuatable to render inoperative substantially simultaneously said feeder means and said cutter means associated with one said feed path and to render operative substantially simultaneously said feeder means and said cutter means associated with the respective other said feed path; and
constraining means co-operating with said change-over means and with said knife elements to render said change-over means actuatable when and only when said displaceable knife elements of said respective cutter means are in predetermined and mutually corresponding positions; whereby the web change-over takes place when the leading edges of said respective webs are each located at corresponding positions in the respective ones of said feed paths.

3,847,047
APPARATUS FOR PERFORATING A WEB OF FLEXIBLE FILM

Richard S. Jackson, Saint Louis, Mo., assignor to Roll-O-Sheets, Incorporated, St. Louis, Mo.

Filed Mar. 29, 1972, Ser. No. 239,239
Int. Cl. B26d 1/40, 5/32
U.S. Cl. 83—344 7 Claims



1. Apparatus for perforating a web on transverse lines spaced longitudinally of the web comprising:
means for feeding the web through the apparatus at a substantially constant speed comprising a rotary back-up roll and means for driving the back-up roll at a substantially constant speed;
a perforator having at least one perforating blade for forming transverse lines of perforations in the web as it travels over the back-up roll, said perforator comprising a plurality of perforating blades spaced at equal angular intervals therearound, a shaft of square cross section thereby having four faces, and means on each of said faces for removably mounting a perforating blade with the blade extending radially outwardly from the shaft;
means mounting said perforator for rotation on an axis parallel to the axis of the back-up roll for movement toward and away from the back-up roll thereby to position the perforating blade to perforate through the web on the back-up roll; and
means for driving the perforator.

3,847,048
POWER FRAME SAW

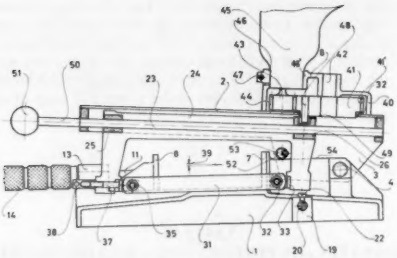
Paul Stolzer, Achern, Germany, assignor to Keuro Maschinenbau Gesellschaft mit beschhrankter Haftung & Co., KG, Achern, Germany

Filed Nov. 8, 1973, Ser. No. 414,127

Claims priority, application Germany, Dec. 22, 1972, 2262957

Int. Cl. B23d *49/04*; B26d *7/02*

U.S. Cl. 83—452 **10 Claims**



1. In a power frame saw including a bench plate, a machine frame arranged on the bench plate, adjustable clamping means operatively arranged on the bench plate for holding a workpiece during a cutting operation, saw frame for holding a saw blade and including a back portion, housing means pivotably articulated to the machine frame for holding the saw frame in a displaceably mounted arrangement so that the saw frame is capable of being moved in a reciprocating stroke direction, the back portion extending along a longitudinal axis parallel to the reciprocating stroke movement of the saw frame, and drive means arranged within the housing means and having a motor-driven crank drive for driving the saw frame, the improvement comprising: means defining two web sections, each extending transverse to the longitudinal axis of said back portion, said web sections being constituted by two widened sections of said back portion, and guide means displaceably guiding said web sections within said housing means, and wherein said crank drive includes a crank disc rotatably mounted in said housing means above said back portion and operatively associated with said back portion, and said crank disc is positioned substantially within the region of the stroke movement of said saw frame and is mounted for rotation about an axis parallel to the cutting plane of a saw blade held by said saw frame and perpendicular to the direction of the stroke movement.

3,847,049
CUTTING TOOL HAVING A RECIPROCATING PUNCH WITH A CARRIER MEMBER INTERCONNECTING A HEAD PORTION AND A DIE PORTION

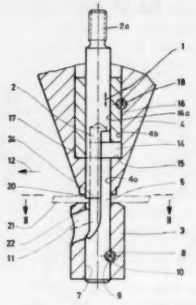
Hubert Bitzel, Warmbornn, Germany, assignor to Firma Trumpf Maschinen AG

Filed June 12, 1973, Ser. No. 369,207

Int. Cl. B23d *27/00*

U.S. Cl. 83—613 **13 Claims**

1. A cutting tool such as a nibbler having a motor driven reciprocatable punch, comprising a head portion having a bore therein, a die member having a bore and being spaced from said head portion to define a workpiece receiving access therebetween, a carrying member engaged in the bores of and secured to said head portion and said die member and having a reduced cross sectional area at a location extending between said head portion and said die member and a predetermined distance into said head portion and said die member, a punch rod member reciprocatable in the bore of said head portion and having a portion of reduced cross section complementary to and slideable on the reduced cross section of said carrying member, the arrangement being such that the total cross section of said punch and said carrying member conforms to



the bores of said head portion and said die member, said reduced cross sectional portion of said punch being movable during operation into the space between said head portion and said die member to cut the workpiece positioned therebetween.

3,847,050
ELECTRONIC ORGAN WITH PLURAL MASTER OSCILLATORS AND PLURAL VIBRATO OSCILLATORS FOR EACH NOTE

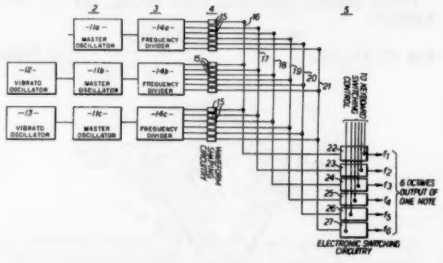
Kenneth Freeman, Sheldon, England, assignor to Audio Synthesisers Limited, North Harron, Middlesex, England

Filed July 26, 1971, Ser. No. 166,116

Claims priority, application Great Britain, Aug. 26, 1970, 41036/70

Int. Cl. G10h *1/04*

U.S. Cl. 84—1.25 **14 Claims**

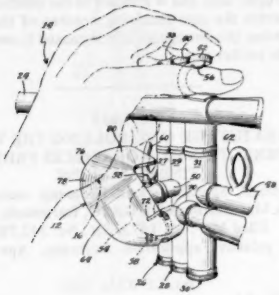


1. In an electronic organ having a number of keys for producing different musical notes, a network producing each note comprising at least two master oscillators, at least two vibrato oscillators, said vibrato oscillators each being connected for modulating the frequency of a respective master oscillator, the said vibrato oscillators operating at mutually uncorrelated frequency and/or phase, and means operative upon actuation of each of said keys for combining the outputs of the said two master oscillators thereby forming an output electrical signal from said network to produce a musical note which displays a random variation.

3,847,051
HAND SUPPORT ATTACHMENT FOR A TRUMPET OR LIKE INSTRUMENT

John Herbert Miller, c/o P. Barrick, 575 Bridge St., Watsonville, Calif. 95076

Filed Jan. 11, 1974, Ser. No. 432,478
Int. Cl. G10d 7/10
U.S. Cl. 84—387 10 Claims



1. A hand support attachment for a trumpet or like instrument having a laterally extending tubular valve slide, said attachment being constructed of rigid sheet material and comprising:

a body portion,

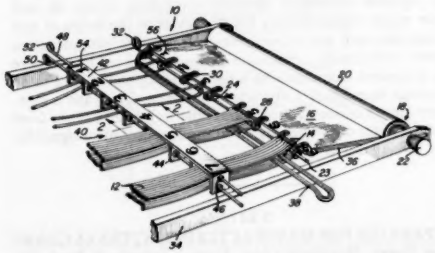
a sleeve-like portion extending from said body portion, said sleeve-like portion being constructed and arranged to be mounted around a section of said slide for supporting the attachment thereon, and

a hand rest portion on said body portion, said hand rest portion being constructed and arranged for supporting the heel of a player's hand for one-hand instrument playing.

3,847,052
FABRIC CONSTRUCTION GUIDE

Rosario Forlano Morcaldi D', 18 Haynes St., East Boston, Mass. 02028

Filed Mar. 28, 1973, Ser. No. 345,698
Int. Cl. D04g 1/00
U.S. Cl. 87—31 5 Claims

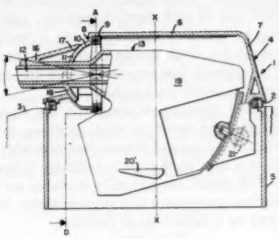


1. A guide for use in forming a fabric and associated with a frame having longitudinally extending frame rails having a plurality of parallel fabric yarns disposed therebetween, said guide comprising a transverse bar having depending flanges defining transverse spaces receiving groups of yarn strands, a pair of rods extending through said flanges in vertically spaced relation for maintaining each group of strands divided into upper and lower groups to retain the yarn strands in orderly orientation, said rods being removable from the flanges to enable assembly and disassembly of the guide with respect to the yarns.

3,847,053
ARMORED VEHICLE

Erich Ubelacker, Bremen, Germany, assignor to Rheinstahl Aktiengesellschaft, Essen, Germany

Filed Jan. 6, 1971, Ser. No. 112,490
Int. Cl. F41f 14/21; F41h 5/20
U.S. Cl. 89—36 K 6 Claims



1. In an armored vehicle having a turret rotatable about its axis, a tubular weapon pivotally mounted in said turret by means of trunnions extending from the sides of the barrel cradle of said weapon, said turret having a cupola which protrudes from the roof of said vehicle, and a cage therebelow which accommodates an ammunition store and the seats for the operating crew of said weapon, the improvement comprising:

a tilt bearing having an outer ring which is firmly mounted in said cupola of said turret and an inner ring which is rotatable about the bore axis of the barrel of said weapon; said barrel cradle having its said trunnions pivotally mounted in said inner ring of said tilt bearing and being provided with an extension which, when said weapon is horizontally aligned, extends rearwardly from said trunnions into said turret beyond the plane of the axis of rotation of the turret and downwardly below the roof of said vehicle into said turret cage, said extension serving as an ammunition store for said weapon.

3,847,054
BURST FIRE MECHANISM FOR AUTO-LOADING FIREARM

William B. Ruger, Southport, and Harry H. Sefried, II, New Haven, both of Conn., assignors to Sturm, Ruger & Co. Inc., Southport, Conn.

Filed Sept. 21, 1973, Ser. No. 396,662
Int. Cl. F41d 11/10
U.S. Cl. 89—129 B 10 Claims

1. In an auto-loading firearm having a frame, a barrel secured to the frame, a bolt mounted for longitudinal travel in the frame behind the barrel, an auto-loading mechanism connected to the bolt for moving the bolt from its forward closed position to its rearward open position and return when the firearm is fired, a hammer pivotally mounted on the frame, said hammer being formed with a primary sear notch and with a secondary sear notch, a trigger pivotally mounted on the frame, said trigger having a primary sear for engaging the primary sear notch of the hammer, a secondary sear pivotally mounted on the frame for engaging the secondary sear notch of the hammer, a rocker arm pivotally mounted on the frame, the rearward end of the pivoted rocker arm being moved upwardly when the bolt is at its forward closed position and

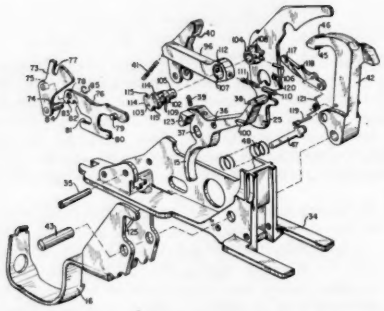
being moved downwardly when the bolt is moved to its rearward open position, said upward and downward movement of the rocker arm alternately causing the secondary sear to be disengaged from and permitting the secondary sear to engage the secondary sear notch of the hammer, the improvement which comprises a firing mechanism capable of firing semiautomatically, fully automatically and in bursts of predetermined duration, said mechanism comprising:

a secondary sear disengager and interrupter support member pivotally mounted on the frame, upward movement of the forward end of said pivoted support member causing the upper end of the secondary sear to move rearwardly out of engagement with the secondary sear notch of the hammer,

an indexing and interrupter assembly rotatably mounted on the forward end of said support member, said assembly comprising an indexing ratchet having a predetermined number of ratchet teeth and an interrupter disc having at least one disengager arm contact surface and at least one disengager arm receiving notch,

an indexing pawl pivotally mounted on the hammer, said pawl engaging the teeth of said indexing ratchet and causing said indexing and interrupter assembly to rotate one tooth at a time each time a cartridge is fired,

an activator link positioner pivotally mounted on the frame for longitudinal movement to a rearwardmost, to an intermediate and to a forwardmost position,



an automatic fire activator link pivotally mounted on said activator link positioner, said activator link having a rocker arm engaging means adapted to engage the rearward end of said rocker arm and a secondary sear disengager arm adapted to contact the interrupter disc of the indexing and interrupter assembly, said rocker arm engaging means and said secondary sear disengager arm being movable forwardly and rearwardly by corresponding movement of the activator link positioner and being movable upwardly and downwardly by corresponding movement of said rocker arm when in engagement therewith, said secondary sear disengager arm moving the foreward end of said support member upwardly to disengage said secondary sear when said disengager arm is moved forwardly and upwardly into contact with an arm contact surface of said interrupter disc,

said activator link positioner being moved to its rearwardmost position to place the activator link at its semiautomatic fire position at which the rocker arm engaging means is out of engagement with the rearward end of the rocker arm and the disengager arm is out of position to contact the interrupter disc of the indexing and interrupter assembly,

said activator link positioner being moved to its intermediate position to place the activator link at its burst fire position at which the rocker arm engaging means is in engagement with the rearward end of the rocker arm and the forward end of the disengager arm is in position to contact the arm contact surfaces and to enter the arm receiving notches of the interrupter disc when the disengager arm is caused to move upwardly by the rocker arm, and

said activator link positioner being moved to its forwardmost position to place the activator link at its fully automatic fire position at which the rocker arm engaging means is in engagement with the rearward end of the rocker arm and the forward end of the disengager arm is in position to contact the arm contact surfaces of the interrupter disc and is forward of the position at which it can enter the arm receiving notches of the interrupter disc when the disengager arm is caused to move upwardly by the rocker arm.

3,847,055

APPARATUS FOR CONTROLLING THE WEIGHT CORRECTION OF WORKPIECES PRIOR TO FINISH-MACHINE

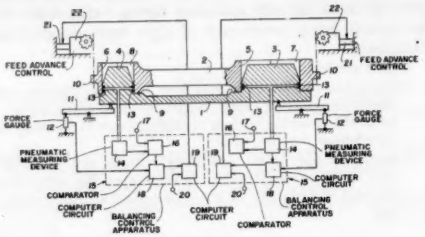
Heinrich Hack, Spachbruecken, Germany, assignor to Carl Schenck Maschinenfabrick GmbH, Darmstadt, Germany

Filed Mar. 19, 1973, Ser. No. 342,780

Claims priority, application Germany, Apr. 19, 1972, 2218904

Int. Cl. B23c *3/00*

U.S. Cl. 90—14 **2 Claims**



1. In an apparatus for the weight correction of a preliminarily machined connecting rod of the type including separate scale means for weighing the connecting rod at each end thereof, and including control means for the weight correction having a computer circuit for converting the difference between the measured weight of the connecting rod and the rated weight of the connecting rod into a control quantity for controlling the feed advance of a milling device for milling the bosses at each connecting rod end; the improvement comprising separate pneumatic diameter measuring means on said scale means for measuring the diameters of the bores of said connecting rod, said control means for the weight correction further comprising comparator means connected to compare the measured diameter with a signal corresponding to a rated diameter to produce a diameter difference signal, and a computer circuit connected to subtract the weight difference from said diameter difference signal to produce a control signal for said milling device.

3,847,056

APPARATUS FOR MANUFACTURING INTERNAL GEARS

Yves Roger, Meudon-la-Foret, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt and Automobiles Peugeot, Paris, both of, France

Filed May 7, 1973, Ser. No. 357,597

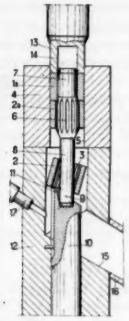
Claims priority, application France, May 23, 1972, 72.18346

Int. Cl. B23d *37/10*

U.S. Cl. 90—73 **10 Claims**

1. Apparatus for manufacturing internally toothed articles from similar hollow cylindrical blanks comprising a die having

a cylindrical bore for receiving a series of such blanks in end to end relation, an externally toothed extrusion broach within the bore, said broach having a blank centering extension at the entry side of the die and a supporting extension at the exit side of the die, ram means constructed and arranged to act on said blanks to periodically force said blanks in succession through



the die where there are formed with internal teeth in passing over said broach, and a retractable support mounted to be displaced between a position where it engages the free end of said supporting extension of the broach while the ram means acts to move said blanks and a retracted position permitting a finished toothed article to pass from said supporting extension.

3,847,057

PRECHARGING ARRANGEMENT FOR A HYDRAULIC DISPLACEMENT MACHINE

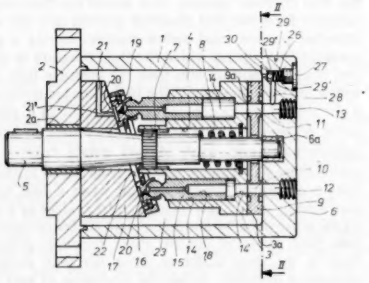
Gunter Ital, and Horst Baurle, both of Stuttgart, Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed Apr. 3, 1972, Ser. No. 240,388

Claims priority, application Germany, Apr. 16, 1971, 7114577

Int. Cl. F01b *3/00*

U.S. Cl. 91—6.5 **10 Claims**



1. Precharging arrangement for a hydraulic displacement machine, comprising closed housing means having an inner control face formed with part-circular high pressure and low pressure ports; actuating means secured to said housing means; cylinder block means mounted in said housing means and having a cylinder block end face slidingly cooperating with said control face, said cylinder block means including working chambers opening in cylinder ports on said end face so that said high pressure and low pressure ports communicate with said cylinder ports during relative rotation of said housing means and said cylinder block means, said cylinder block means including displacement members in said working chambers having free end portions cooperating with said actuating means so that said displacement members are reciprocated between a suction stroke and a compression stroke, and fluid from said working chambers flows through said high pressure and low pressure ports, said actuating means and said cylinder block means forming in said housing means a closed inner space; throttle means connecting said closed inner space with said low pressure port when leakage fluid at a predetermined pressure fills said inner space; and control means, including openings in said free end portions of said displacement members communicating with the associated working chambers, and channel means in said actuating means cooperating at one end with said closed inner space and at the other end with said openings, for disconnecting said closed inner space from said working chambers when said cylinder ports are located on said high pressure and low pressure ports, and for connecting said closed inner space with a respective working chamber when the cylinder port of the respective working chamber is located between said high pressure and low pressure ports on said control face and as the displacement member in said respective working chamber approaches the end of its suction stroke so that the respective working chamber is filled with fluid from said closed inner space having said predetermined pressure.

3,847,058

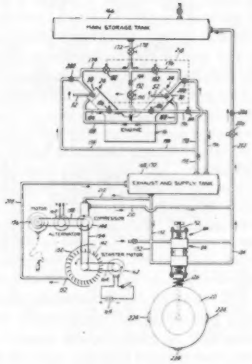
VALVE MECHANISM FOR AN AIR OPERATED RECIPROCATING ENGINE

Robert T. Manor, Box 95, Salmonia, Ind. 47381

Filed Mar. 14, 1973, Ser. No. 341,318

Int. Cl. F15b *11/00*

U.S. Cl. 91—413 **7 Claims**



1. For use in a reciprocating engine, a valve mechanism comprising body means having two inlets, two outlets and two exhaust passages therein, a cylindrical cavity in said body means intersected by said passages, said inlets and outlets being on different sides of said cavity, a cylindrical sleeve valve rotatably slidably fitted into said cavity and having a first series of ports in the wall thereof, a cylindrical spool valve rotatably mounted coaxially inside said sleeve valve and having a plurality of passages therethrough extending generally transversely with respect to the axis thereof, said sleeve and spool valves each having two angularly related operative positions, in one of said positions first and second ones of said ports registers with opposite ends, respectively, of a first one of said spool passages and first ones, respectively of said inlet and outlet passages, none of the other ports register with any

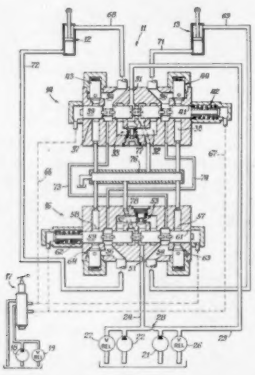
other passages for said first position; with said sleeve valve in said first position and said spool valve in said second position a second passage in said spool valve registers at opposite ends with said second port and a third port in said sleeve valve and said second and third ports in turn register with said first outlet passage and a first exhaust passage, none of the other ports and passages being in registry; with said sleeve and spool valves in said second position said first spool passage registers at opposite ends with said first and second sleeve ports which registers in turn with second ones of said inlets and outlets and none of the other ports and passages being in registry; with said sleeve in said second position and said spool in said first position a third passage in said spool registers at opposite ends with said second sleeve port and a fourth sleeve port, said second and fourth sleeve ports also registering, respectively, with said second outlet and the second exhaust passage; with said sleeve in said second position and said spool in said second position said first spool passage registers at opposite ends with said first and second sleeve ports and these in turn register, respectively, with said second inlet and outlet while none of the other spool passages register with any other sleeve port; the first position of said sleeve valve being for forward operation of said engine and the second position for reverse; means for moving each of said sleeve and spool valves individually to the first and second positions thereof; a first engine cylinder having a piston defining a chamber therein, said outlets communicating with the chamber above said piston.

3,847,059

DUAL CONTROL VALVE ASSEMBLY

Henry E. Beck, Oswego, and Wayne A. Peterson, Joliet, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Sept. 4, 1973, Ser. No. 394,192
Int. Cl. F15b *11/22*
U.S. Cl. 91—413 **8 Claims**



1. A hydraulic control circuit for operating a pair of double-acting hydraulic jacks in unison, each of the jacks having a rod end and a head end, the hydraulic control circuit comprising two similar control valves responsive to a common actuating means, each control valve including a fluid inlet port, two service chambers and drain means, a spool being movable within each control valve by the common actuating means for selectively communicating the service chambers with the inlet port and drain means, each control valve having its service chambers in communication with one end of each of the two hydraulic jacks,

two similar sources of fluid under pressure,

inlet conduit means respectively communicating the two sources with the fluid inlet ports for the two control valves, and

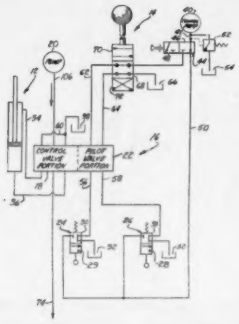
means defining a restrictive orifice arranged in communication between the two inlet conduits.

3,847,060

CONTROL VALVE

Stanley C. Jasinski, Woodstock, Ontario, Canada, and Timberjack Machines Limited, 03, Woodstock, Ontario, Canada

Continuation of Ser. No. 27,549, April 13, 1970, abandoned. This application Sept. 13, 1972, Ser. No. 288,819
Int. Cl. F15b *11/08, 13/042*
U.S. Cl. 91—453 **6 Claims**



1. A fluid system for controlling a fluid motor in a first operational mode through a plurality of binary control valves actuated by automatic means and in a second operational mode by a manually actuated control valve comprising:

a fluid motor;

a pilot operated control valve assembly having a control valve portion for conducting pressurized fluid from a pressurized fluid supply to said fluid motor to effect control of said fluid motor and having a pilot valve portion connected to said control valve portion to control said control valve portion, said control valve portion having a passageway for allowing pressurized fluid to be transmitted to successive fluid systems, said pilot valve portion including a piston member and a body having a chamber therein for receiving said piston member, said piston member dividing said chamber into first and second chamber portions, means for directing fluid pressure into the first chamber portion, and means for directing fluid pressure from the first chamber portion into the second chamber portion, said piston member having a greater pressure face against which the fluid pressure in the second chamber portion acts than the pressure face against which the fluid pressure in the first chamber portion acts; a plurality of binary control valves connected to said pilot valve portion to operate said fluid motor in said first operational mode, each of said binary control valves establishing a first signal and a second signal to said pilot operated control valve such that when a first signal is provided by one of said binary control valves or a second signal is provided by another of said binary control valves said pilot operated control valve conducts pressurized fluid to the fluid motor to move the fluid motor in a respective direction during the operation of said system in said first operational mode;

a manual control valve for operating said fluid motor in said second operational mode, said manual valve having a neutral position and a second position, said manual valve receiving pressurized fluid transmitted to the second chamber portion from the first chamber portion through said means for directing fluid pressure into the second chamber portion when pressurized fluid is supplied to the first chamber portion, the second position of said manual valve blocking the second chamber portion from fluid communication with the reservoir so that the pressurized fluid received by the second chamber portion from the

first chamber portion exerts a force greater than the force exerted by the pressurized fluid in the first chamber portion due to the greater pressure face area, said manual control valve further including means for blocking fluid flow in a conduit means for normally directing fluid from said second chamber to a low pressure reservoir;

a selector valve for switching the operation of said fluid motor between said first operational mode and said second operational mode by supplying pressurized fluid to either said manual control valve or said binary control valve to exclusively operate the valve supplied with said pressurized fluid; and

said manual control valve including means for overriding the control of said control valve through said binary control valves during the first operational mode and reversing the direction of said fluid motor movement to an opposite direction upon actuation of said override means.

3,847,061

CONTROLS FOR VARIABLE PUMPS OR MOTORS

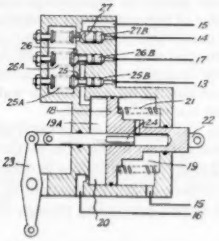
Richard Joseph Ifield, Dural, New South Wales, Australia, assignor to Advanced Products Pty. Limited, Dural, New South Wales, Australia

Filed July 24, 1972, Ser. No. 274,691

Claims priority, application Australia, July 28, 1971, 5697/71

Int. Cl. F04b *1/26*

U.S. Cl. 91—497 **7 Claims**



1. In a control system for variable displacement pumps, motors and the like, including a servo-motor having a pilot element operably associated therewith for control of said servo-motor in response to positioning of said pilot element, which positioning effects changes in the displacement of the pump, motor, and the like with which it may be associated, the combination of a main control means operative to position said pilot element, a primary servo-motor includng a cylinger having a piston mounted therein, said piston defining a chamber at one end of said cylinder, said piston being operably movable within said cylinder by pressures developed in said chamber, and being operably interconnected to said pilot element whereby movement of said piston varies the position of said pilot element in precedence to the operative effect thereon of said main control means, and vent means for reducing the pressure level within said chamber, said vent means including at least one vent valve having a movable valve element and a coacting valve seat, spring means resiliently urging said valve element to a closed position against said valve seat, a variable fluid pressure to be monitored and sealed plunger means subject to said pressure to be monitored and acting on said valve element in opposition to said spring means, whereby, when said pressure to be monitored reaches a predetermined value, said valve element is unseated to vent said chamber.

3,847,062

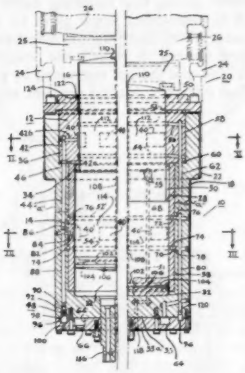
PLUNGER AND CYLINDER ARRANGEMENT

John J. Sutyak, Pittsburgh, Pa., assignor to Mesta Machine Company, Pittsburgh, Pa.

Filed Dec. 27, 1971, Ser. No. 212,558

Int. Cl. F01b *31/10*

U.S. Cl. 92—86.5 **12 Claims**



1. A fluid bearing plunger and housing arrangement comprising a housing, a plunger member closely fitted within said housing for reciprocation therein, said housing defining a pressure chamber therein for actuating said plunger member, a plurality of discrete pressure recesses formed in an inner surface of said housing and juxtaposed to said plunger member, said recesses circumferentially surrounding said plunger member and in addition being substantially equally spaced from one another, a pair of exhaust grooves formed in said inner housing surface and juxtaposed to said plunger member, said exhaust grooves being axially spaced one of each side of said recesses, said grooves circumferentially and continuously surrounding said plunger member, one of said grooves being disposed between said recesses and said chamber, and conduit means for supplying a pressurized fluid to each of said recesses and for conveying from said exhaust grooves any fluid collected therein, each of said pressure recesses being circumferentially spaced from adjacent recesses and axially spaced from said exhaust grooves to an extent that the fluid resistance of surrounding first interfacial areas of said member and said housing establish an essentially hydrostatic pressure condition in said recesses, said first interfacial areas extending uninterruptedly between adjacent one of said pressure recesses and uninterruptedly between said recesses and said exhaust grooves, said plunger member extending beyond said one groove and toward said chamber so that second interfacial areas of said member and said housing between said chamber and said one groove effectively isolate said one groove from said chamber, said second interfacial areas and said one groove interrupting any leakage from said pressure chamber to said first interfacial areas and said pressure recesses.

3,847,063

VACUUM OPERABLE UNITS FOR IGNITION DISTRIBUTORS

William Harold Cooksey, Walsall, England, assignor to Joseph Lucas (Industries) Limited, Birmingham, England

Filed June 29, 1972, Ser. No. 267,595

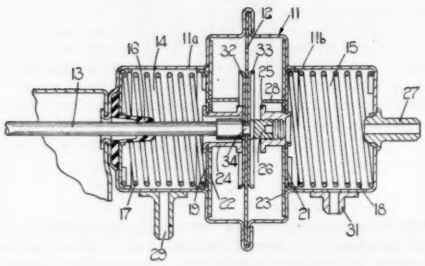
Claims priority, application Great Britain, July 2, 1971, 31079/71

Int. Cl. F01b *19/00;* **F16j** *3/00*

U.S. Cl. 92—100 **4 Claims**

1. A vacuum operable unit for use with an internal combustion engine ignition distributor including a hollow casing hav-

ing a pair of fixed outer walls and divided into first and second chambers by a flexible diaphragm, a push rod coupled at one end to the diaphragm so as to move therewith and arranged at its other end to be coupled to the timing plate of an ignition distributor, said rod extending through said outer wall of said first chamber and sealing means engaging said outer wall of the first chamber and the rod to seal said first chamber while permitting movement of the rod, first resilient means within the first chamber having first retaining means at a first end thereof which is operatively acted upon by the diaphragm during movement of the diaphragm in a first direction from a central position thereof to reduce the volume of the first chamber, a second end thereof restrained by said outer fixed wall of said first chamber, second resilient means within the



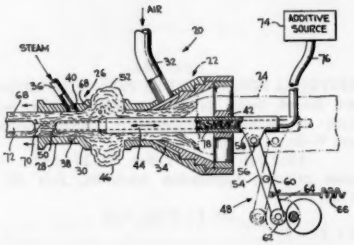
second chamber having second retaining means at a first end thereof which is operatively acted upon by the diaphragm during movement of the diaphragm in a second direction from said central position to reduce the volume of the second chamber, a second end thereof restrained by said outer fixed wall of said second chamber, and first and second abutment means fixed to the casing and engagable by said first and second retaining means respectively in said central position of the diaphragm for preventing said first and second resilient means respectively from operatively acting on said diaphragm in said central position, and first and second extensions on said first and second retaining means, respectively, extending through and beyond said first and second abutment means, respectively, for engaging said diaphragm.

3,847,064
TOBACCO SMOKE FILTER

Richard M. Berger, Richmond, Va., assignor to American Filtrona Corporation, Richmond, Va.

Division of Ser. No. 287,803, Sept. 11, 1972, Pat. No. 3,811,451. This application Jan. 17, 1974, Ser. No. 434,223
Int. Cl. A24c 5/50
U.S. Cl. 93—1 C **9 Claims**

1. A method of making smoke filter means comprising:
a. providing a bondable filtering material including a multiplicity of fibrous members;
b. continuously passing said filtering material into and through an elongated bonding zone and, intermediate the passage of said filtering material through said bonding zone, contacting same with a bonding agent to bond said fibrous members of said filtering material to each other at spaced contact points thereby forming an elongated, smoke-permeable, rod defining a tortuous path for passage of smoke therethrough;
c. during the passage of said filtering material through said bonding zone, positioning a mandrel generally axially of said bonding zone to define an annular space through which said filtering material must pass;
d. reciprocating said mandrel in timed relationship to the passage of said filtering material through said bonding zone between a first position, at least as far forward in the path of travel of said filtering material as the point at which said filtering material is contacted by said bonding agent, to thereby produce a smoke-permeable annular wall of bonded fibrous members as said filtering passes said point, and a second position, sufficiently rearwardly of said point in the path of travel of said filtering material to permit a portion of said filtering material to extend



transversely completely across said bonding zone before reaching said point, to thereby produce a smoke-permeable plug of bonded fibrous members as said filtering material passes said point, said annular wall and said plug being integral with each other, whereby said rod is provided with intermittent internal cavities totally enclosed and surrounded by said annular wall and by plugs forwardly and rearwardly thereof;
e. overwrapping said rod with an overwrapping material so as to juxtapose portions of the inner surface of said overwrapping material with continuous peripheral portions of the exterior surface of at least portions of selected plugs to form sealed areas precluding passage of smoke thereacross; and
f. transversely severing said overwrapped rod at selected locations to form filter elements each of which includes at least one of said internal cavities and at least one of said sealed areas.

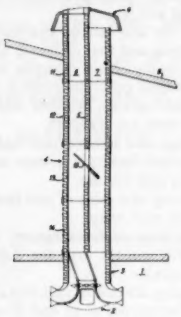
3,847,065
VENTILATION SYSTEM

Jorgen Holt, Naestved; Christian Videmark, Haslev, and Palle Hein Christiansen, Naestved, all of Denmark, assignors to Nordisk Ventilator Co., A/S, Naestved, Denmark

Filed June 7, 1973, Ser. No. 367,906
Claims priority, application Denmark, June 9, 1972, 2914/72
Int. Cl. F24f 13/00
U.S. Cl. 98—33 **2 Claims**

1. A ventilation system comprising a duct for the injection of fresh air and a duct for the exhaustion of air from a ventilated room, said ducts extending at least on part of their length side by side, a common flat partition separating said ducts on said part of their length and incorporation an opening between said ducts and a damper member which is arranged in said opening to be movable between two extreme position in one of which it closes said opening and in the other of which it blocks both ducts and opens up for complete recirculation of air exhausted from the room back to the room through the injection duct, said damper member consisting of a damper plate of a material of high heat conductivity and coatings of

insulating material applied to both surfaces of said plate, the coating on the surface facing the injected air flow covering said plate completely absent from an area along the peripheral edge of the part of the damper plate located in the injection



duct and the coating on the opposite surface of said damper plate covering said part of the plate located in the injection duct right to said peripheral edge and leaving the part of the plate located in the exhaust duct uncovered.

3,847,066

INLET GRILL

Wim Van Der Ham, Asenvagen 7, Jonkoping, Sweden

Filed Aug. 2, 1972, Ser. No. 277,141

Claims priority, application Switzerland, Aug. 13, 1971, 10318/72

Int. Cl. F24f *13/06*

U.S. Cl. 98—40 VT **9 Claims**

1. An inlet grill for supplying gases with varying conditions for control of dwelling rooms, comprising a plurality of elongated blades disposed with their edges facing the supply of gas, said blades constituting guide bars for guiding the gas stream, characterized in that at least of some of the blades are automatically adjusted to different angles relative to the flow direction in response to the varying conditions of the supplied gas, said blades being made of a material which can be bent or flexed to change the angular deflection of the gas stream through the grill, and including bimetal strips secured to said blades transverse to said edges to effect bending of said blades in response to temperature changes in the gas stream.

3,847,067

ELECTRICALLY HEATED CORN POPPER AND FOOD WARMING APPARATUS

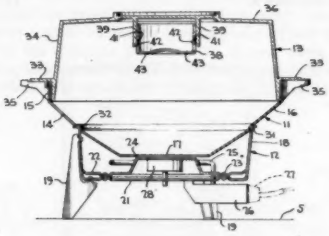
George B. Munsey, Little Rock, Ark., assignor to Munsey Products, Inc., Little Rock, Ark.

Filed Mar. 12, 1973, Ser. No. 340,083

Int. Cl. A23l *1/18*

U.S. Cl. 99—323.8 **7 Claims**

1. A corn popper and food warming apparatus comprising a receptacle having a bottom portion and circular sidewall for containing a quantity of corn to be popped, a stand base supporting said receptacle, said base including an upwardly open cup-shaped element having a bottom wall and a circular sidewall for the reception of said bottom portion of said receptacle, legs on said cup-shaped element, a deep-dished cover for said receptacle, said cover having a circular sidewall, a butter container removably mounted at the top inner portion of said cover, a receptacle support plate connected to the inner surface of said bottom wall, said plate having a raised and flat central portion spaced from said inner surface, electric heating element surrounding said raised and flat central portion, and said bottom portion of said receptacle being formed as a truncated cone defining a conical section and a flat and central portion, said conical section being supported along the peripheral edge of said base circular sidewall and said flat central portions abutting one another to stabilize the support of said receptacle.



3,847,068

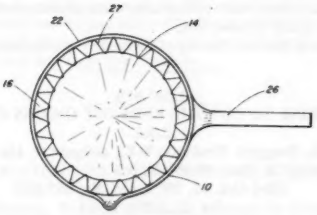
FATLESS FRYING PAN

Carl Beer, Taborton Rd., Sand Lake, N.Y. 12153, and Steven Vincent Beer, 312 Eastwood Ave., Ithaca, N.Y. 14850

Division of Ser. No. 180,811, Sept. 15, 1971, abandoned. This application July 30, 1973, Ser. No. 383,598

Int. Cl. A47j *37/10*

U.S. Cl. 99—425 **4 Claims**



1. A self-draining fry pan which comprises;

a. a convex surface for frying foods;

b. a channel for collecting fat or grease from frying food circumferentially disposed about the frying surface, said channel having an inner side wall connected to the periphery of said frying surface and an outer side wall forming an outer pan rim, the base of said channel being below the periphery of said frying surface;

c. means for arresting the frying food on said convex surface and for preventing said food from contacting said fat or grease collected in said channel which comprises a member having crimped lateral walls and which is disposed about the periphery of the convex surface and atop said channel, said crimped lateral side walls extending to a height above the lowest point on said convex surface; and

d. means connected to said inner side wall for grasping said fry pan.

3,847,069

PIZZA BAKING OVEN WITH A HELICAL RACK AND A RADIALLY DRIVEN IMPELLER

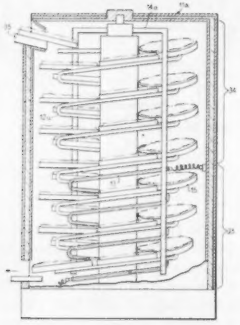
Raul Guibert, New York, N.Y., assignor to Jeno F. Paulucci, Duluth, Minn.

Filed Dec. 19, 1972, Ser. No. 426,065

Claims priority, application Argentina, Dec. 20, 1972, 245751; Dec. 20, 1972, 245752

Int. Cl. A47j *37/06*

U.S. Cl. 99—443 R **12 Claims**



1. An oven comprising:

a. a cabinet having a baking chamber;

b. a support rack including means defining a helical track for supporting a circular article to be baked, in a radially outwardly overhanging relation thereon, said helical track having a vertical axis;

c. a electrical baking heater disposed in proximity to said rack; and

d. a driven impeller movable about said vertical axis in a path which is radially external to said rack but which intersects the overhanging portion of the circular articles, the coaction between said support rack and said impeller on the article causing the article to pass along the helical track about said vertical axis, while simultaneously rotating about its own axis,

whereby uniform baking of the article is obtained.

3,847,070

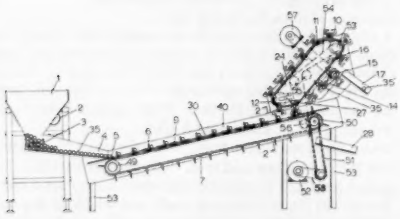
MACHINE TO CUT THE ENDS OFF ONIONS OR THE LIKE

Henry A. Draggett, Fredonia, N.Y., assignor to Ajax Flexible Coupling Co., Inc., Westfield, N.Y.

Filed Oct. 12, 1972, Ser. No. 297,003

Int. Cl. A23n *15/04*

U.S. Cl. 99—643 **6 Claims**



1. A machine for removing ends from articles that are like onions in shape comprising,

a first conveyor having spaced articles receiving positions thereon,

means for feeding said articles in sequence to said first conveyor,

a second conveyor,

a plurality of spaced cutting members for removing said ends from said articles,

gripping means on said second conveyor for transferring said articles from said first conveyor to said second conveyor, said gripping means engaging said articles on opposite sides thereof generally midway between said ends and moving said articles between said cutting members whereby said ends are removed,

means to discharge said articles from said second conveyor, said first conveyor having a bottom and sides extending upwardly from said bottom,

means for adjusting said sides of said first conveyor toward and away from each other,

said sides being adapted to be spaced from each other a distance slightly greater than the distance between the ends of said articles,

a chute for feeding articles to said first conveyor,

a stop member supported at an end of said chute adjacent said first conveyor,

said first conveyor having a continuous chain member,

a platelike member supported on said platelike chain member, laterally spaced pins fixed to said continuous member,

said spaced pins being adapted to move along each side of said stop to move said articles from said stop up said first conveyor to said second conveyor.

3,847,071

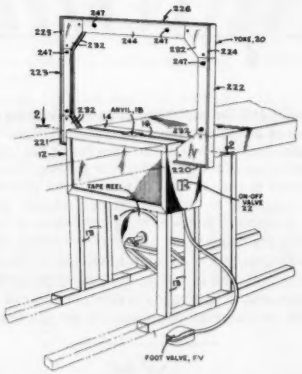
STRAPPING MACHINE FEED

George F. Goodley, Media, Pa., assignor to FMC Corporation, San Jose, Calif.

Division of Ser. No. 198,862, Nov. 15, 1971, Pat. No. 3,759,169. This application Feb. 14, 1973, Ser. No. 332,465

Int. Cl. B65b *13/32*

U.S. Cl. 100—32 **1 Claim**



1. Article strapping apparatus of the type wherein reversible, power driven strap transport wheel means includes a friction feed wheel that feeds the strap through an article receiving yoke and a friction tension wheel, means for gripping the free end of the strap, and the transport wheel means is reversed to cause the tension wheel to tension the strap; the improvement wherein said feed and tensioning friction wheels are of the same diameter and are geared solidly together, said wheels being covered with a rubber-like material for peripherally gripping the strap between them, and means for guiding the strap so that the strap enters at the feed wheel and wraps

around it at least 90° whereupon the strap passes through the nip of the wheels, wraps around the tensioning wheel at least 180° and continues on to the yoke.

3,847,072

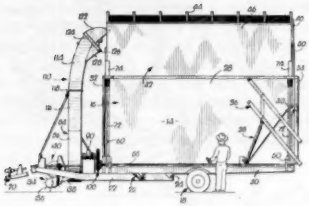
LOOSE HAY WAGON

Harold Keith Garrison, Newton, Kans., assignor to Hesston Corporation, Hesston, Kans.

Continuation of Ser. No. 83,665, Oct. 23, 1970, abandoned, which is a division of Ser. No. 815,894, April 14, 1969, Pat. No. 3,556,327. This application Apr. 18, 1973, Ser. No. 352,123

Int. Cl. B30b *9/30*

U.S. Cl. 100—35 **7 Claims**



1. The method of making a stack of hay which comprises the steps of:

feeding a stream of loose hay into a collapsible container having a pair of sections of substantially identical sizes and configurations, including a hollow, open top body provided with a bed, and a normally elevated open bottom press having a crowned roof, each being additionally provided with opposed, upright side and end walls, the press being restricted to vertical, rectilinear reciprocation and being an upper extension of the body, aligned and in registered communication with the latter, when the press is elevated;

placing as much of said hay into the container as can be held or practically contained by continuing said hay feeding step while the press is elevated until both the body and the press are filled with a loose mass of said hay; thereupon

preforming said mass into the shape of a polygonal haystack by lowering the press into the body with a steady, continuous force sufficient to slip the press between the body and said mass to dispose the press over and around the mass, enclosing the latter within the press, surrounded by the side and end walls of the press, and confined between said roof and said bed; and

condensing said preformed mass into a compact stack of substantially uniform density throughout, molded to the internal configuration of the press, by continuing said steady press lowering force without interruption to inwardly compress the preformed mass simultaneously end to end thereof, laterally thereof and from top to bottom thereof prior to raising the press to its normally elevated position.

3,847,073

HAY ROLL FORMING MACHINE

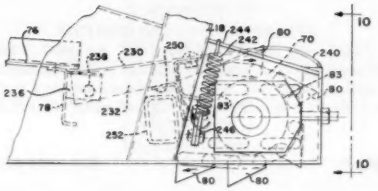
Aquila D. Mast, Lancaster; Edward T. Eggers, New Holland, and Myles Hyman, Lancaster, all of Pa., assignors to Sperry Rand Corporation, New Holland, Pa.

Filed Apr. 24, 1973, Ser. No. 353,948

Int. Cl. B30b *5/06, 9/00;* **A01d** *39/00*

U.S. Cl. 100—88 **5 Claims**

1. A mobile hay roll-forming machine comprising in combination, a mobile frame, an endless apron in the lower portion of said frame having an upper course extending substantially horizontally, floor means supported beneath said upper course of said apron to support the same for movement thereover, means operable to move said upper course rearwardly in said machine, means to deliver a swath of agricultural product to the forward end of said upper course of said apron, upper roll-forming means in said machine operable to cooperate with said endless apron to form said swath of product into a roll, said endless apron comprising a plurality of endless flexible members spaced from each other transversely across said machine and the upper courses of said members being movable within a plane extending longitudinally of said machine relative to the direction of movement thereof along a field, upstanding lugs on said flexible members engageable with the lower surface of a roll of said product and operable to move



the same rearwardly while said upper roll-forming means engages and moves the upper surface of said roll forwardly and thus revolves said roll about its axis while supported in said machine, a terminal supporting means extending rearwardly from the rearward end of said floor means, said means having slots therebetween through which said flexible members and the lugs thereon passes to disengage said roll, and means engaging said terminal supporting means and normally urging the same in a position to cause said flexible means and lugs thereon to pass through said slots therein as aforesaid but said means also being operable to depress said terminal supporting means when a roll is to be discharged therefrom and thereby cause said lugs on said flexible members to continue to be exposed and engage said roll substantially to the end of said terminal supporting means and thereby facilitate discharge of said roll from said machine.

3,847,074

POWER SYSTEM FOR MULTI-PRESSURE HYDRAULIC PRESS

Edmund Nowak, Warszawa, Poland, assignor to Przedsiebiorstwo Doswiadczalne Pras Automatycznych i Tlocznikow "Ponar-Hydomat", Warsaw, Poland

Filed Aug. 17, 1972, Ser. No. 281,389

Claims priority, application Poland, Nov. 9, 1971, 150463

Int. Cl. B30b *1/34, 15/06*

U.S. Cl. 100—209 **8 Claims**

1. A double-acting hydraulic press having two pressing stations comprising, in combination:

a. a first power cylinder;

b. a first plunger positioned in said first power cylinder, said first plunger having a first plurality of working faces to which hydraulic fluid may be independently applied;

c. means for selectively supplying hydraulic fluid to said first power cylinder and thence selectively to at least one of said first plurality of working faces;

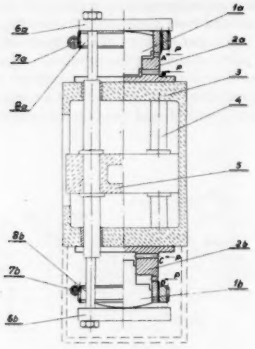
d. a platen positioned between said two pressing stations and having a first and a second working surface;

e. coupling means coupling said platen to said first plunger;

f. a second power cylinder;

g. a second plunger positioned in said second power cylinder, said second plunger having a second plurality of working faces to which hydraulic fluid may be independently applied;

h. means for selectively supplying hydraulic fluid to said second power cylinder and thence selectively to at least one of said second plurality of working faces; and



i. further coupling means for coupling said platen to said second plunger;

whereby various pressures for the press may be effected by selectively supplying hydraulic fluid to one or simultaneously more than one of said working faces to move said platen selectively and alternatively into one and the other of said pressing stations.

3,847,075

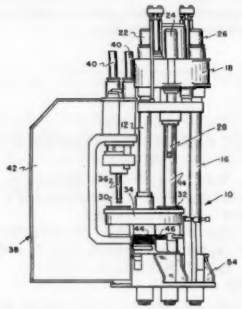
TURNTABLE APPARATUS FOR PRESSES

Raymond F. Boshold, Springfield, Pa., assignor to Wean United, Inc., Pittsburgh, Pa.

Filed Oct. 16, 1973, Ser. No. 407,016

Int. Cl. B30b *15/32*

U.S. Cl. 100—223 **8 Claims**



1. In a press having turntable for selectively carrying a number of containers into and out of a pressing station of said press,

means for lowering and raising said turntable to bring said turntable into two different axial positions with respect to the pressing axis of said press,

a driving member mounted in a spaced relationship with said turntable,

a driven member connected to said turntable arranged to be engaged by said driving member on operation of said turntable, lowering and raising means to bring said turntable into one of said two different positions, and

power means for driving said driving member to cause a rotation of said turntable when said turntable is in said raised position.

3,847,076

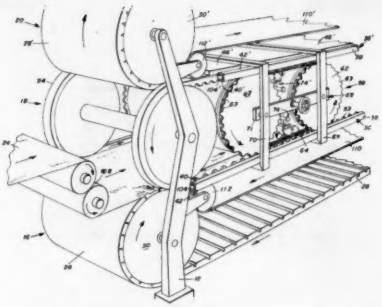
PRINTING APPARATUS

Michael Vasilantone, 147 E. First Ave., Roselle, N.J. 07203

Filed Jan. 4, 1973, Ser. No. 321,016

Int. Cl. B41l *13/08*

U.S. Cl. 101—122 **4 Claims**



1. In an apparatus for continuously printing on a moving flexible material comprising a platen for receiving said material to be printed, said platen comprising a movable endless web having a top run and a bottom run, means for moving said material over said platen for movement therewith, printing means adjacent one of said runs of said platen for continuously printing said material supported by said platen, and a table supporting that portion of said one of said runs disposed opposite said printing means, the improvement comprising a movable endless friction reducing band of substantially planar sheet-like material having a surface friction coefficient less than that of said platen disposed within said endless platen and having a run extending between said platen run and said table and movable with said platen, thereby reducing friction between said platen and said table.

3,847,077

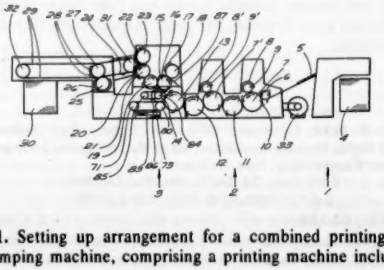
SETTING UP ARRANGEMENT FOR A COMBINED PRINTING AND STAMPING MACHINE

Peter Zirnstein, Rathmannsdorf; Erwin Schebiella, Heidenau; Siegfried Koerner, Dresden; Joachim Weise, Dresden, and Horst Mulansky, Dresden, all of Germany, assignors to Veb Polygraph Leipzig Kombinat Fuer Polygraphische Maschinen und Ausruestungen, Leipzig, Germany

Filed Apr. 2, 1973, Ser. No. 347,360

Int. Cl. B41b *5/02*

U.S. Cl. 101—24 **20 Claims**



1. Setting up arrangement for a combined printing and stamping machine, comprising a printing machine including

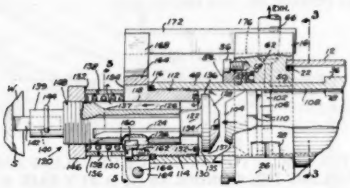
sheet feeding means, a plurality of printing rollers for printing and transporting a sheet, and including an output roller, and auxiliary depositing means for receiving printed sheets from said output roller, and for depositing said sheet on a first stack; drive means for driving said printing machine; a stamping machine including a plurality of stamping rollers including an input roller; main depositing means for receiving stamped out sheet portions from said stamping machine and for depositing the stamped out sheets on a second stack; a transfer roller having an inoperative position separated from said output and input rollers, and a transfer position for transferring the imprinted sheets from said output roller to said input roller; clutch means having an engaged position for connecting said driven output roller, said transfer roller, and said input roller for rotation, and a disengaged position in which said stamping machine is not driven by said drive means; and control means having a setting up position for placing said transfer roller in said inoperative position and said clutch means in said disengaged position so that said printing machine can be set up separately while printed sheets are deposited on said first stack and said stamping machine is not driven by said drive means, and an operating position for placing said transfer roller in said transfer position and said clutch means in said engaged position so that said drive means drive said printing machine, said transfer roller, and said stamping machine while the printed and stamped out sheet portions are deposited on said second stack.

3,847,078

PNEUMATICALLY OPERATED MARKING TOOL

Frank Krembel, Jr., St. Clair Shores, Mich., assignor to Columbia Marking Tools, Inc., Detroit, Mich.

Filed Nov. 29, 1973, Ser. No. 420,074
Int. Cl. B44b *5/00*
U.S. Cl. 101—3 R **35 Claims**



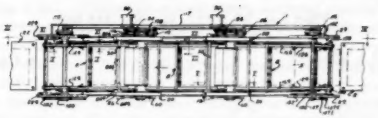
1. Marking tool structure which comprises,
a first pneumatic cylinder with a piston and piston rod therein, a portion of the rod projecting beyond an end of the cylinder,
said rod being hollow and defining a second pneumatic cylinder,
vent means between the interior of said second cylinder and atmosphere,
a member axially movable in said rod portion between one position in which it pneumatically closes said vent means and another position in which it opens said vent means, said member being biased toward said one position,
means providing a marking die holder mounted for movement with said member,
said first cylinder being ported to receive air under pressure for advancing and retracting said piston relative to a workpiece,
said holder being effective to move said member against said bias to said other position responsive to engagement of a marking die held thereby with a workpiece,
said member being provided with means forming an anvil,
a ram pneumatically movable in said second cylinder,
said second cylinder being provided with first porting to receive air under piston-advancing pressure from said first cylinder, and second porting to receive air under piston-retracting pressure from said first cylinder,
said ram, responsive to opening of said vent means being advanceable under the force of air under pressure received through said first porting for striking said anvil,
said member being effective to transmit striking force of said ram against said anvil to said holder and a marking die held thereby for marking a workpiece,
said ram being retractable in said second cylinder under the force of air under pressure received through said second porting,
and pressure retaining means associated with said first porting cooperable with said member in said one position to retain air under pressure in said second cylinder received through said second porting.

3,847,079

METHOD OF PRINTING SHEETS

Harold P. Dahlgren, 726 Regal Row, Dallas, Tex. 75247

Continuation of Ser. No. 250,143, May 4, 1972, abandoned, which is a continuation-in-part of Ser. No. 737,521, June 17, 1968, Pat. No. 3,664,261. This application Sept. 10, 1973, Ser. No. 395,808
Int. Cl. B41f *5/08*
U.S. Cl. 101—426 **5 Claims**



1. A method of sheet-fed printing comprising, providing a sheet; providing a printing press having at least two adjacent rotatable printing cylinders; positioning the leading edge of a sheet in a gripper element; moving the gripper element toward and between the printing cylinders in a straight line substantially normal to a line intersecting the tangent point of the cylinders and the longitudinal axes thereof; printing on both sides of the sheet carried by the gripper element at substantially the same instant; and moving the gripper element away from the printing cylinders in a substantially straight line to disengage the sheet from surfaces of each of the printing cylinders whereby the sheet when passing between the cylinders is maintained in substantial line contact with the cylinders.

3,847,080

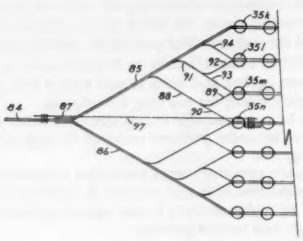
REMOTE ROCK BREAKING METHOD APPARATUS THEREFOR

Robert E. Eckels, Golden, Colo. 80401

Division of Ser. No. 117,537, Feb. 22, 1971, Pat. No. 3,741,119. This application Apr. 19, 1973, Ser. No. 352,503
Int. Cl. F42b *3/10;* **C06d** *5/00*
U.S. Cl. 102—27 R **4 Claims**

1. A detonating cord bridle arrangement for a plurality of explosive charges placed in a plurality of parallel rows for essential simultaneously detonating each row of explosives, said bridle arrangement comprising a length of detonating cord extending from an initiating point to a first juncture of a first set of at least two detonating cords, said first set of detonating cords extending from said length of detonating cord at an angle less than 60°; each cord of said set being extended to a pair of second junctures of a pair of second sets of at least two detonating cords, each of the cords of said second sets extending from the respective cords of said first set at an angle less than 30°; each cord of said second sets being arranged for

detonating a row of explosive charges; the detonating cords forming said bridle arrangement being of a flexible, unshielded type and the length of the detonation paths of all the



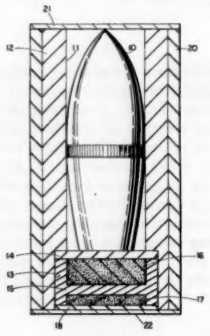
cords from said first juncture to each of the charge rows being equal; and float means attached to the detonating cords for maintaining said cords taut to provide separation and prevent sharp directional changes in said cords.

3,847,081

AMMUNITION

Joseph B. Quinlan, and Arthur F. Darrah, both of Philadelphia, Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 20, 1972, Ser. No. 316,955
Int. Cl. F42b *5/18*
U.S. Cl. 102—38 **6 Claims**



1. A high temperature resistant telescope caseless cartridge comprising,

a first cylindrical single base molded propellant charge having a forward central passage containing a projectile completely encapsulated therein and a relatively larger rearward central passage,

a booster seal extending across said rearward passage adjacent said projectile,

a primer cup containing a booster mix and a primer mix in said rearward passage with said booster mix adjacent said booster seal,

a primer seal extending across said rearward passage adjacent said primer mix,

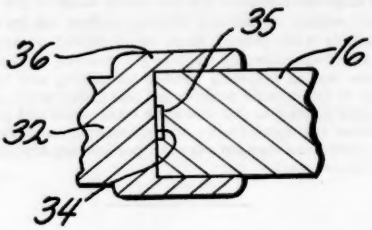
a second cylindrical high temperature resistant molded propellant charge surrounding the periphery of said first cylindrical molded charge, said high temperature resistant molded charge comprising a cyclic nitramine selected from the group consisting of tetranitrotetramethylenetetramine and trinitrotrimethylenetriamene, and a polymeric binder selected from the group consisting of polyacrylate, cellulose acetate and cellulose butrate, and a pair of end seals extending completely across the respective ends of said second cylindrical molded propellant charge, said pair of end seals being of the same material as said high temperature resistant molded charge.

3,847,082

SPIN STABILIZED, DISCARDING SABOT PROJECTILE

Fritz Feldmann, Santa Barbara, Calif., assignor to Pacific Technica Corporation, Santa Barbara, Calif.

Division of Ser. No. 854,095, Aug. 29, 1969, Pat. No. 3,714,900. This application Aug. 8, 1972, Ser. No. 278,859
Int. Cl. F42b *11/14, 13/16*
U.S. Cl. 102—93 **1 Claim**



1. A spin-stabilized discarding sabot projectile comprising a full caliber sabot base formed of a relatively soft metal, means on said sabot base for imparting rotation to the projectile during traverse of a gun barrel, a recess in the sabot base, a sub-caliber core fitted into the recess, the core having a conical forward body portion and a generally cylindrical main body portion terminating in a base portion, said base portion of the core having a slot therein into which the metal base is pressed during launch of the projectile to increase the transfer of torque between the base and the core.

3,847,083

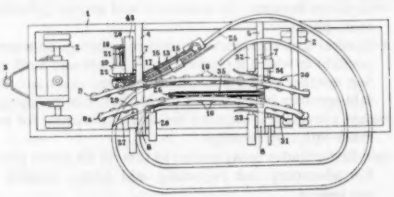
Patent Not Issued For This Number

3,847,084

DEVICE FOR AUTOMATICALLY COUPLING AND UNCOUPLING THE GONDOLAS OF A FUN FAIR RIDE

Michel Fouche, Milly, 49350, Gennes, France

Filed Jan. 23, 1974, Ser. No. 435,642
Claims priority, application France, Jan. 30, 1973, 73.03210
Int. Cl. B61k *1/00*
U.S. Cl. 104—20 **6 Claims**



1. A device for automatically uncoupling and coupling the gondolas of a fun-fair ride, of the interchanger or belt-line type which comprises a frame structure 1 mounted on wheels

2 and having a pair of parallel cross members 4, 5 interconnecting a pair of longitudinal frame members at the ends of said device, two pairs of registering posts 7, 8 pivoted to said cross members, the posts of each pair being adapted to be moved towards and away from each other by manual or automatic means in order to move a pair of parallel rails 9, 9*a* towards and away from each other, said rails 9, 9*a* having the same curvature as the loop of said ride along which the gondolas are normally driven during the ride operation, one post 7 on the side of the incoming gondolas carrying beneath the rails 9, 9*a* an endless chain 13 and a ramp 14, the opposite post 8 carrying a longer ramp 27, members for controlling the movements of said rails and ramps in order to lock the coupling member 38 of a gondola 37 and allow the relevant support 24 to continue its travel between said rails, the pair of posts 7, 8 on the outlet side of the belt line comprising similar ramps 30, 31 adapted to cause said gondolas to be coupled with their supports, and a loop track 25 terminating on one side beneath the uncoupling station and on the other side beneath the coupling station for routing the released or uncoupled gondolas towards the coupling station.

3,847,085

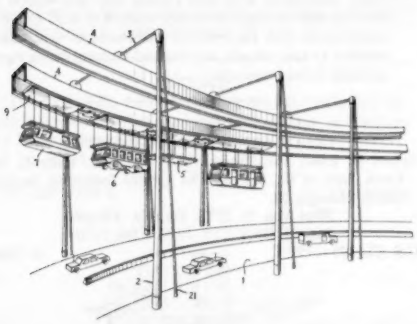
DUAL-MODE TRANSPORTATION SYSTEM

Albert B. Rypinski, Teaneck, N.J., assignor to Duo-Mode Electric Transport System, Inc., Teaneck, N.J.

Continuation-in-part of Ser. No. 379,203, July 16, 1973, which is a continuation of Ser. No. 89,266, Nov. 13, 1970, abandoned. This application July 23, 1973, Ser. No. 381,440

Int. Cl. B61b *3/00*

U.S. Cl. 104—122 **12 Claims**



1. A transportation system comprising:

a self-propelled surface vehicle;

an overhead track extending over part of a route to be traveled by said vehicle;

a motor-driven vehicle carrier riding on said track; and

hoist means on said carrier engageable with said vehicle for lifting same off the surface at a first location and redepositing same on the surface at a second location interlinked with said first location by said track, said hoist means comprising a platform, cable means suspending said platform from said carrier, reversible wind-up means for said cable means on said platform, and coupling means on said platform engageable with the top of said vehicle for suspending same from said platform upon a raising of the latter by operation of said wind-up means.

3,847,086

SUSPENDED RAILWAY HAVING A MAGNETIC SUSPENDED GUIDE OF ITS VEHICLES

Ulf Steenbeck, Miesbach, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Filed Dec. 29, 1972, Ser. No. 319,908

Claims priority, application Germany, Jan. 15, 1972, 2201820

Int. Cl. E01b *25/06*

U.S. Cl. 104—130 **11 Claims**

1. In a switching zone for a magnetic suspended railway having means defining a switch entrance and a pair of switch exits and means defining a support beam at said switch entrance and said switch exits on which at least one vehicle having a pair of laterally spaced means defining driving legs thereon is supported in a suspended position by means defining conductive rails and guided by first guide magnets positioned relative to said conductive rail means, said first guide magnets being mounted on opposed surfaces of said driving legs, said conductive rail means being mounted on oppositely facing surfaces of said support beam means outside of said switching zone, said support beam means being partly enclosed by said driving legs on said vehicle, the improvement comprising wherein, within said switching zone, said support beam means comprises at least three support beams which are each tapered on one side toward a central portion of said switching zone and terminate at said central portion, a first support beam including support means extending from said switch entrance into said central portion and between the remaining two of said support beams, said remaining two of said support beams extending from said central portion to one of said switch exits, the spacing between said first support beam and said remaining two support beams in said central portion being equal, means in said central portion of said switching zone defining a pair of second guide magnets, one on each side of said first support beam, for establishing a magnetic coupling with said first guide magnets in said central portion and on at least one side of said vehicle, said first and second guide magnets having identical polarity, means defining first magnetically conductive guide rails on the opposite side of said driving legs from said second guide magnets and means defining a pair of third guide magnets for establishing a magnetic coupling with said first conductive guide rail means in said central portion and on at least the other side of said vehicle from said one side.

3,847,087

POWER TRANSMISSION ARRANGEMENT FOR A MAGNETIC SUSPENSION RAILROAD

Alfred Lichtenberg, Erlangen, Germany, assignor to Siemens Aktiengesellschaft, Munchen, Germany

Filed July 26, 1973, Ser. No. 382,882

Claims priority, application Germany, Aug. 11, 1972, 2239595

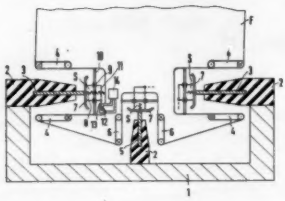
Int. Cl. B61b *13/08*; **B60l** *5/00*

U.S. Cl. 104—148 MS **3 Claims**

1. An improved power transmission arrangement for a suspension railroad of the type in which magnets or current

carrying primary conductor loops installed in a vehicle react with secondary conductor loops or electrically conducting plates installed on the roadbed for the purpose of generating forces for lifting and guidance comprising:

a. means supporting the secondary conductor loops or



electrically conducting plates so that they are insulated from the roadbed;

b. at least one live rail supported by one of said insulating supports; and

c. at least one collector having a long sliding strip mounted on the vehicle and arranged to contact said live rail.

3,847,088

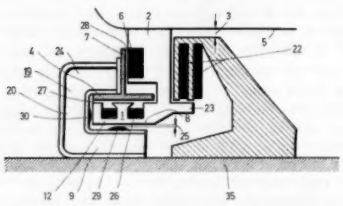
MAGNETICALLY SUSPENDED RAILWAY SYSTEM

Ludwig Karch, Munich, Germany, assignor to Messerschmitt-Bolkow-Blohm GmbH, Munich, Germany

Division of Ser. No. 139,355, May 3, 1971. This application Sept. 7, 1973, Ser. No. 395,131

Int. Cl. B61b *13/00*

U.S. Cl. 104—148 MS **14 Claims**



1. A suspension railway system, comprising a vehicle, rail means located under the vehicle, carrying magnet means disposed below the vehicle and coupled to said rail means for suspending the vehicle and moving the vehicle forward, guide magnet means secured under said vehicle and coupled to said rail means for transversely guiding the vehicle relative to said rail means, carrier means secured to the bottom of said vehicle and mounting said carrying magnet means, said rail means including at least one magnetic structure forming an armature for both said carrying magnet and said guide magnet means, said carrier means projecting said carrying magnet means below the armature, said armature being disposed between said carrying magnet means and the bottom of the vehicle, and a plurality of running surfaces on said rail means and opposite said carrier means for mechanically supporting said vehicle during the absence of suspension.

3,847,089

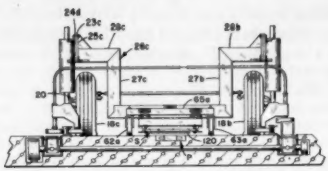
VEHICLE DRIVE MEANS

Roy A. Nelson, Grand Prairie, Tex., assignor to LTV Aerospace Corporation, Dallas, Tex.

Filed Oct. 16, 1972, Ser. No. 298,064

Int. Cl. B60l *13/00*; **B61b** *13/08*

U.S. Cl. 104—148 LM **5 Claims**



1. In a vehicle movable over a roadway having one operative element of a linear induction motor extending longitudinally along the roadway;

a chassis;

a plurality of wheels movable over the roadway;

mounting means connecting the chassis to the wheels including means yieldably biasing the chassis against downward movement relative to the wheels;

a second element of the linear induction motor for imparting a thrust force to said chassis to move the vehicle over the roadway when said motor is energized;

connecting means connecting said second motor element to said chassis including means for varying the operative position of said second element relative to said first element for varying the propelling thrust force on the chassis in accordance with the load on the chassis, said connecting means including a carriage, front and rear pairs of rollers supporting front and rear ends of said carriage for movement over the roadway, and linkage means operatively associated with said chassis and said rollers for moving said carriage vertically relative to said rollers in accordance with the vertical movement of said chassis relative to said wheels, said second element being rigidly secured to said carriage.

3,847,090

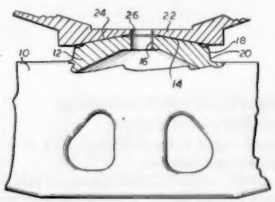
TRUCK CENTER PLATE BEARING

Robert B. Love, Park Forest, and Robert P. Radwill, Oak Lawn, both of Ill., assignors to Amsted Industries Incorporated, Chicago, Ill.

Filed Mar. 9, 1973, Ser. No. 339,586

Int. Cl. B61f *5/16*, *5/50*; **F16c** *17/04*

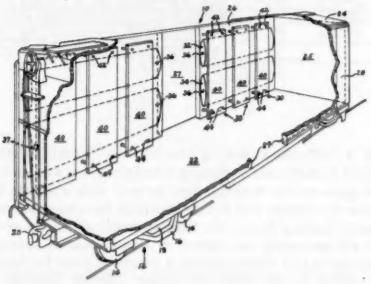
U.S. Cl. 105—199 C **6 Claims**



1. A center plate assembly for a railway vehicle comprising; a body center plate having a body central portion including a lower frusto-conical surface tapering inwardly from its outer edge toward said body central portion, and a truck center plate having a truck central portion including an upper frusto-conical surface tapering inwardly from its outer edge toward said truck central portion, said frusto-conical surfaces being

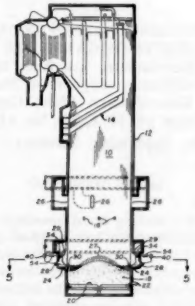
complementary and forming load-bearing surfaces between said plates; at least one of said frusto-conical surfaces having a circumferentially oriented depressed contour contiguous to at least part of the outer edge of that surface.

3,847,091
INFLATABLE DUNNAGE
Jan D. Holt, St. Charles, Mo., assignor to ACF Industries, Incorporated, New York, N.Y.
Filed Nov. 13, 1972, Ser. No. 305,853
Int. Cl. B65d 45/00
U.S. Cl. 105—369 BA 17 Claims



1. A lading restraint apparatus comprising: a plurality of inflatable members mounted along the longitudinal length of a transportation vehicle; a plurality of panels mounted along the longitudinal length of the vehicle inwardly from the inflatable members whereby during inflation the inflatable members urge the panels inwardly to engage the lading; adjacent panels being urged inwardly by different inflatable members so that the panels are movable inwardly to different extents to provide flexibility in lading restraint.

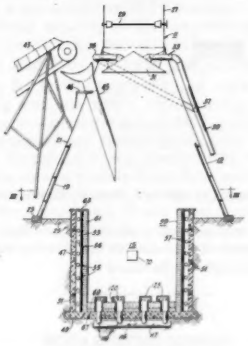
3,847,092
AUTOMATIC BED LEVEL CONTROL FOR FURNACES
Lyman Francis Gilbert, Somers, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.
Filed Dec. 10, 1973, Ser. No. 423,645
Int. Cl. F23k 3/00
U.S. Cl. 110—101 R 14 Claims



1. In a furnace in which a material is burned on a bed, emitting light, and in which the level of said bed is a function of a control variable, means for controlling the level of said bed comprising:

a. means for sensing said emitted light and providing a signal which varies as a function of the intensity of said sensed light and is indicative of the level of said bed; and
b. means responsive to said signal for controlling said control variable to control said bed depth.

3,847,093
REFUSE BURNER APPARATUS
Anthony Foster, Paradise, Calif., assignor to Koppers Company, Inc., Pittsburgh, Pa.
Continuation-in-part of Ser. No. 339,336, March 8, 1973, abandoned. This application May 30, 1973, Ser. No. 364,021
Int. Cl. F23g 5/12
U.S. Cl. 110—8 C 8 Claims



1. A burner comprising:
a. a shell disposed above and surrounding;
b. a subterranean chamber for burning material therein having an open top;
c. means at the top of said shell for regulating the emission therefrom of effluent produced by said burning material;
d. means adjacent the top of said shell for collecting said effluent, and conduit means for carrying it thence;
e. said conduit means communicating with a fan that is motorized and discharges said effluent into
f. a second conduit means in communication with said chamber whereby said effluent is reintroduced thereinto;
g. said chamber having side walls that are fluid cooled and a bottom or floor of sand;
h. means for introducing and for removing fluid from said side walls;
i. means for introducing burnable material into said chamber;
j. means for removing ash residue from said chamber; and
k. burner means discharging heat into said chamber for raising the ambient therein.

3,847,094
TREATMENT OF COMBUSTIBLE RESIDUE
Alois Taeymans; Georges Dumont, and Willem Balleux, all of Mol, Belgium, assignors to Belgonucleaire, Brussels, Belgium
Filed Sept. 5, 1973, Ser. No. 394,444
Claims priority, application Belgium, Sept. 6, 1972, 121748
Int. Cl. F23g 5/00
U.S. Cl. 110—8 R 12 Claims

1. A process for treating incinerated material to filter out particles and for regenerating the filter comprising the steps of:

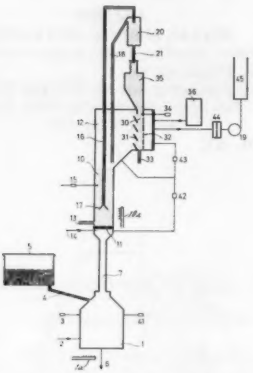
incinerating the material, thereby generating fumes and particles;

passing the fumes and particles through a filter of the granule bed type to filter out the particles, the particles being retained among the filter granules;

regenerating the granules by transferring them from the filter into a fluidized bed of such granules and incinerating the granules in the bed, thereby destroying the particles;

returning the regenerated granules to the filter;

after incineration of the material, first passing the fumes and particles through the fluidized bed.



3,847,095

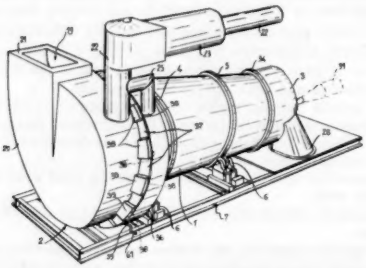
REFUSE INCINERATOR

Felix Bauer, 87, Rue Moncey, Lyon, and Claude Valdenaire, 11, Rue des Roses, Villeurbanne, both of France

Filed May 11, 1973, Ser. No. 359,326

Int. Cl. F23g *5/06*

U.S. Cl. 110—14 **16 Claims**



1. A refuse incinerator comprising: a central rotatable drum having a casing of generally frusto-conical shape; an inner enclosure secured to said casing, said enclosure being at least partly polygonal in cross-section and having an internal refractory wall; a loading compartment fixed at one end of said drum; an ash-box fixed at the other end of said drum; said inner enclosure defining with said casing a corresponding number of independent passage means to carry combustion air into said enclosure; and a distributor for injecting said combustion air only into the lower portion of said enclosure.

ERRATUM

For Class 110—165 see:
Patent No. 3,847,296

3,847,096

RIBBON FEEDING DEVICE IN BUTTONHOLE SEWING MACHINES

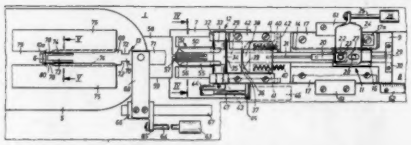
Ernst Albrecht, Hochspeyer, and Klaus Hubele, Kaiserslautern, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern, (Pfalz), Germany

Filed May 9, 1974, Ser. No. 468,539

Claims priority, application Germany, May 21, 1973, 2325705

Int. Cl. D05b *3/04*

U.S. Cl. 112—65 **10 Claims**



1. In a bottonhole sewing machine for forming ribbon-reinforced buttonholes, including a bedplate, a sewing needle, a stitch plate on the bedplate and formed with a needle hole to receive the needle and defining a stitch formation location, a material feeding frame for feeding material to the sewing needle, ribbon supply and ribbon cutting means for supplying ribbon lengths to a ribbon feeder a receiving zone for feeding of the ribbon to the stitch formation location beneath the material feeding frame for stitching to the material, and drive and control means for operating the machine in repetitive buttonhole forming cycles: an improved ribbon feeding device comprising, in combination, means forming a channel in said stitch plate in the working zone of said material feeding frame and extending to said stitch formation location, and providing a feeding surface over which the material is fed to said stitch formation location by said frame; the upper edges of said channel having, over at least a part of their length, inwardly projecting ledges, which ledges, in said working zone, are flush with said feeding surface; said ribbon feeder comprising a relatively elongated strip of resilient material reciprocable, in guided relation, forwardly from said receiving zone into said channel, and reversely to said receiving zone, and said strip including means engageable with the ribbon at said receiving zone to feed a length of the same into said channel and to said stitch formation location; said strip having guide surfaces projecting laterally over the ribbon and engageable beneath said ledges; and means for reciprocating said ribbon feeder.

3,847,097

DEVICE FOR MAKING BRAID OPENINGS IN CUTOUT PIECES OF GARMENTS

Albert Dusch, Kaiserslautern, and Peter Hintzen, Krickenbach, both of Germany, assignors to Pfaff Industriemaschinen GmbH, Kaiserslautern (Pfalz), Germany

Filed Mar. 18, 1974, Ser. No. 452,446

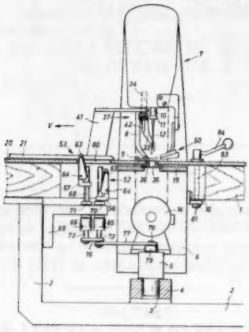
Claims priority, application Germany, Mar. 20, 1973, 2313717

Int. Cl. D05b *3/00*

U.S. Cl. 112—68 **8 Claims**

1. In a device for making braid openings, extending either straightly or obliquely to the hem edge of cutout pieces of a garment, of the type including a displaceable workpiece clamp, on a two-needle sewing machine which is pivotable about a pivot axis, coinciding with the axis of symmetry of the needles, into selected angular positions, defined by the displacement direction of the workpiece clamp and the longitudinal axis of the sewing machine arm shaft, and lockable in these positions, a folding guide mechanism for a braid strip, a cutting knife, for making a longitudinal slit, working between the needles, a drive member for the cutting knife included in the

sewing machine, and a cutting mechanism, including a set of individually controllable angle knives, for making diverging incisions at the ends of the longitudinal slit: the improvement comprising, in combination, means mounting said angle knives separately from said sewing machine for conjoint rotation about respective axes each of which is parallel to the motion path of the associated angle knife; transmission means connecting said angle knives to said sewing machine for posi-



tive angular adjustment of said angle knives responsive to such pivoting of said sewing machine; a support for said cutting knife; means mounting said support separately from said sewing machine; fixed guide means slidably engaging said support; and coupling means connecting said cutting knife support to said cutting knife drive member and providing for relative movement between said support and said drive member.

3,847,098

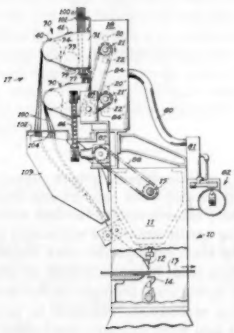
YARN FEED MODULE FOR TUFTING MACHINE

Wallace W. Hammel, Jr., East Ridge, Tenn., assignor to Card & Co., Inc., Chattanooga, Tenn.

Filed July 23, 1973, Ser. No. 381,866

Int. Cl. D05c *15/32*

U.S. Cl. 112—79 A **9 Claims**



1. In a tufting machine having a plurality of reciprocal needles operative to stitch yarns through a base fabric, a yarn feed mechanism comprising:

a. a drive housing of substantial length having a front wall portion,

b. at least two drive shafts rotatably mounted in said housing,

c. a rotary drive coupling member driven by each of said drive shafts at a speed proportional to the speed of said corresponding drive shaft,

d. a plurality of module frames, each module frame having front and rear end portions and a width substantially less than the length of said drive housing,

e. a yarn feed roll rotatably mounted on each of said module frames,

f. at least two rotary clutch members mounted on each of said module frames,

g. means operatively coupling said rotary clutch members to said yarn feed roll for selective driving of said feed roll,

h. means for selectively actuating only one clutch member at a time,

i. at least two rotary driven coupling members mounted on the rear end portion of each of said module frames, each of said driven coupling members being adapted to register with and drivingly engage a corresponding drive coupling member, in operative position, and to drivingly disengage said drive coupling member in inoperative position,

j. drive transmission means on each of said module frames drivingly connecting each of said driven coupling members to a corresponding clutch member,

k. detachable securing means on each of said module frames for attaching the rear end portion of each of said module frames to the front wall portion of said drive housing for driving engagement of each of said driven coupling members with a corresponding drive coupling member, in operative position, and for detaching the rear end portion of said module frame from said front wall portion for driving disengagement of the driven coupling members on said module frame from said corresponding drive coupling members, in inoperative position, and

l. means for driving each of said drive shafts at a different speed so that each of said rotary clutch members in a module frame is driven at a corresponding different speed.

3,847,099

RIBBON FEEDING ATTACHMENT FOR SEWING MACHINES

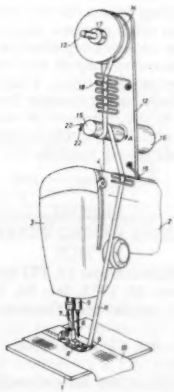
Oskar Braun, Kaiserslautern/Pfalz, Germany, assignor to Firma Pfaff Industriemaschinen GmbH, Koenigstrasse, Germany

Filed July 31, 1973, Ser. No. 384,219

Claims priority, application Germany, Aug. 18, 1972, 7230617

Int. Cl. D05b *35/06*

U.S. Cl. 112—152 **9 Claims**



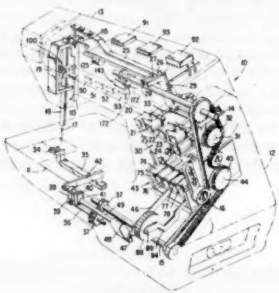
1. An attachment for feeding ribbon-like strips to be treated under a small tensile stress to the stitch forming location

below a foot of a sewing machine, comprising a ribbon supply reel, a delivery roller adjacent said ribbon supply reel, a separate drive motor connected to said delivery roller for rotating said delivery roller at a permanently constant circumferential speed corresponding at least to the maximum possible advance speed of the strip in the machine, means for guiding the ribbon from the ribbon supply reel loosely around said delivery roller in at least one complete and loose loop of at least 360° and following the sense of rotation of the delivery roller and to the sewing machine foot, said delivery roller being driven continuously at least during each sewing operation.

3,847,100
PATTERN SELECTION SYSTEM FOR SEWING MACHINES

Stephen A. Garron, Elizabeth, N.J., assignor to The Singer Company, New York, N.Y.

Filed Jan. 9, 1974, Ser. No. 432,027
Int. Cl. D05b *3/02, 69/10, 55/16*
U.S. Cl. 112—158 E **7 Claims**



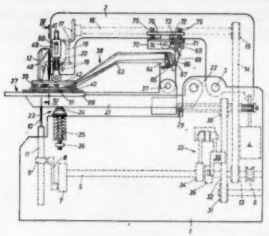
1. A sewing machine having stitch forming instrumentalities capable of producing successive stitches in a variety of different stitch patterns and including a needle, a mechanical actuator for imparting repetitive stitch forming cycles of operation to said stitch forming instrumentalities, an electromagnetically influenced actuator operatively connected to said stitch forming instrumentalities for controlling the stitch pattern produced thereby, memory storage means for data regulating the placement of each stitch in a stitch pattern and having the capacity for the storage of separate data relating to each of a plurality of different stitch patterns, operator influenced pattern selection means for rendering effective data stored in said memory storage means relating to any selected one of said plurality of different stitch patterns, a skip stitch mechanism for separating said mechanical actuator from said needle, and means responsive to the operation of said pattern selector means for operating said skip stitch mechanism for one stitch forming cycle of said sewing machine.

3,847,101
SEWING MACHINE HAVING THREAD SEVERING DEVICE

Gunter Tolle, Wendelinusstrasse 15, 752 Bruchsal 4, Germany

Filed Dec. 20, 1973, Ser. No. 426,605
Claims priority, application Germany, Jan. 2, 1973, 2300042
Int. Cl. D05b *65/02*
U.S. Cl. 112—252 **6 Claims**

1. A sewing machine comprising a machine frame having a workpiece support, a bracket mounted on said frame for pivotal movement upwardly to a rest position and downwardly to an operative position, a needle mounted on said frame for upward and downward reciprocation below said support, a rotatable shuttle mounted on said bracket overlying said needle for cooperative engagement therewith, a clamping arm connected to said bracket for movement therewith and pivoted on said frame over said support and having an end

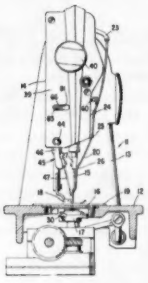


adapted to clamp the workpiece on the support, a thread cutter carried by said bracket and connected to said clamping arm, said clamping arm being movable by upward movement of said bracket to actuate said cutter to sever the thread.

3,847,102
NEEDLE THREAD WIPER AND PULL-BACK MECHANISM FOR SEWING MACHINES

Gerd Rogner, Karlsruhe, Germany, assignor to The Singer Company, New York, N.Y.

Filed Jan. 21, 1974, Ser. No. 435,373
Int. Cl. D05b *65/00, 49/00*
U.S. Cl. 112—252 **3 Claims**



1. In a sewing machine having a work support and a sewing head carried above said work support and fitted with an end cover plate, a loop taker arranged beneath said work support, a thread carrying needle supported within said sewing head for endwise reciprocation through the work support in cooperation with the loop taker in the formation of stitches, a needle thread take-up mechanism arranged in the sewing head, and thread trimming mechanism effective to sever the needle thread beneath said work support, mechanism for withdrawing a severed needle thread above the work support comprising a thread wiping arm pivotally mounted within said sewing head end cover plate to swing in an arc traversing the path of the needle thread between said needle and said work support, an actuator for said thread wiping arm, operating mechanism connecting said thread wiping arm to said actuator for imparting movement in a fixed throw to said thread wiping arm, a thread pull-back lever fulcrummed within said end cover plate to swing in an arc traversing the path of the needle thread between said needle thread take-up mechanism and said needle, an operating link for said thread pull-back lever having a

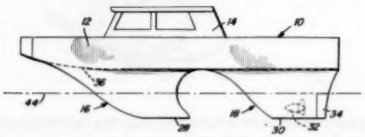
connection with said thread wiper operating mechanism and a pivotal connection with said thread pull-back lever, at least one of said connections being adjustable and accessible through an opening in said sewing head end cover so that a change in the stroke of the thread pull-back lever may be effected from externally of the sewing machine.

3,847,103

SPLIT HULL DESIGN FOR BOATS

Richard T. Takeuchi, 1651 Ala Moana Blvd., Honolulu, Hawaii 96815

Filed May 4, 1972, Ser. No. 250,325
Int. Cl. B63b *1/18*
U.S. Cl. 114—66.5 R **14 Claims**



1. A boat hull including an upper longitudinally continuous hull section and fixed, longitudinally spaced, front and rear upright, fin shaped and depending displacement-type hull means, the weight of said hull in relation to the displacement of the lower portions of said displacement-type hull means being such that the water line on the hull is disposed at a level intermediate the upper and lower ends of said upright displacement-type hull means, said front and rear hull means both being constructed as integral non-shiftable portions of said hull section and with the upper extremities of said hull means merging smoothly into adjacent surfaces of said hull section, said front hull means including upstanding sharply rearwardly tapered rear extremities extending upwardly from considerably below the waterline to said upper hull section and spaced appreciably forward of the waterline forward extremities of said rear hull means, said rear hull means including upstanding sharply rearwardly tapered rear extremities and said front and rear hull means including forwardly and upwardly inclined forward extremities, at least one of said hull means comprising a pair of laterally spaced depending hull portions, each of said hull portions as well as the other hull means being contoured, in horizontal section, to move through a fluid medium with little resistance from said medium to passage therethrough.

3,847,104

MARINE STERN RUDDER BLADE

Nicolaus Kaufer, Judenbuehlweg 42, D-8700, Wuerzburg, Germany

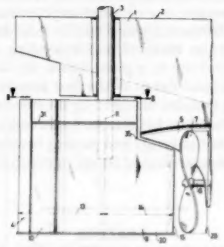
Filed Dec. 12, 1972, Ser. No. 314,447
Claims priority, application Germany, Dec. 17, 1971, 2162648; July 14, 1972, 2234603; Nov. 2, 1972, 2253571
Int. Cl. B63h *25/06*
U.S. Cl. 114—162 **13 Claims**

1. A single-blade rudder secured to the stern of a ship for motion about a vertical pivot axis into opposite extreme or hard-about positions, the ship having a screw that generates a screw wash extending parallel to the forward direction of straight-line travel of the ship, the screw having a radius and a rotational outline, the rudder being situated in its entirety rearwardly of said screw in central alignment therewith, comprising in combination:

a. a leading part extending from said pivot axis forwardly thereof and having a horizontally measured length dimension at least as large as the screw radius; and

b. a trailing part extending from said pivot axis rearwardly thereof, said trailing part having

1. a front portion extending from said pivot axis rearwardly thereof and having a horizontally measured length dimension at least as large as the screw radius, whereby a projection of said rotational outline of said screw onto said rudder parallel to said direction is substantially fully within the combined area of said leading part and said front portion of said trailing part



in either extreme position of the rudder for receiving the entire screw wash, said leading part and said front portion of said trailing part effecting a first deflection of the screw wash;

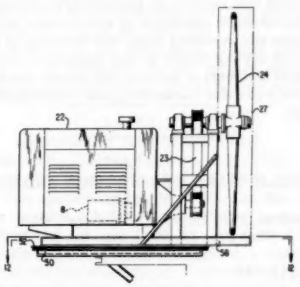
2. a rear portion adjoining a rear terminus of said front portion and extending rearwardly thereof, said rear portion including rearwardly divergent lateral wall surfaces for effecting a second deflection of the screw wash subsequent to its said first deflection when said rudder is in either of its extreme positions.

3,847,105

AQUATIC HARVESTER

Thomas G. Kelpin, Shreveport, La., assignor to American Waterweed Harvesting Company, Inc., Shreveport, La.

Division of Ser. No. 97,497, Dec. 14, 1970, Pat. No. 3,698,163.
This application Oct. 16, 1972, Ser. No. 297,864
Int. Cl. B60f *3/00*
U.S. Cl. 115—1 C **8 Claims**



1. An air thrust propulsion and steering system comprising an air propulsion unit having an internal combustion engine and an aerodynamic propeller, and a mounting means for said air propulsion unit comprising a first horizontally disposed annular member secured to the craft to be propelled, a second annular member superimposed upon said first annular member, said second annular member being radially immovable with respect to said first annular member and circumferentially rotatable about a common vertical axis therewith, engine

mounting means secured to said second annular member, and means to selectively rotate said second annular member through an arc of 360°, said first and second annular members being of sufficient diameter to underlie a substantial portion of the propulsion engine and said engine being mounted substantially centered upon said second annular member, said first and second annular members each comprise a horizontally disposed annular-shaped flange and a generally vertically-disposed flange secured to said horizontal flange at a point near the outer circumference thereof, the vertical flange of said second annular member occupying a radially, inwardly contiguous position with respect to the vertical flange of said first annular member, one or more angular bracket members secured to said horizontally disposed annular-shaped flange of said second annular member and depending outwardly and downwardly therefrom to a point below the horizontally dislosed annular-shaped flange of the first annular member, and a roller bearing member attached to the downwardly projecting portion of each bracket member, said roller bearing member being disposed inwardly and passing beneath the horizontally disposed annular-shaped flange of the first annular member.

3,847,106

MATERIAL HANDLING OR TRANSFER EQUIPMENT

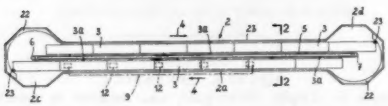
Paul Lamberet, Vonnas-Ain, France

Filed Aug. 30, 1973, Ser. No. 393,135

Claims priority, application France, Mar. 29, 1973, 73.12038

Int. Cl. B63b *21/56*

U.S. Cl. 115—7 **9 Claims**



1. In apparatus including a waterway, a plurality of serially arranged floating carriers in said waterway, a cable extending along said waterway and connected to said carriers to move the latter along the waterway, and working stations along the waterway at which retaining influences may be exerted on the movement of said carriers, an improvement comprising longitudinal members on respective of said carriers independently of said cable and extending along said waterway at least at said stations and driving means at said stations for acting on the longitudinal members to advance the carrier along the waterway whereby to avoid transmitting said retaining influences to said cable.

3,847,107

HYDRAULIC MARINE PROPULSION AND GUIDANCE SYSTEM

Curt Buddrus, 2522 Hoyes St., Muskogee, Okla. 74401

Filed Feb. 16, 1973, Ser. No. 333,301

Int. Cl. B63h *25/42*

U.S. Cl. 115—35 **10 Claims**

1. A hydraulic propulsion and guidance system for a marine vessel having a transom, comprising:

a fluid pressure generating system within the vessel;

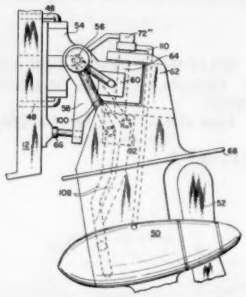
a clevis, means mounting said clevis to the outside of the transom of the vessel and permitting said clevis to rotate in a generally vertical plane about a first axis;

a fluid motor carried by said clevis, means permitting said motor to rotate from side to side with respect to said clevis about a second axis;

dual passage swivel means operatively mounted for movement along said second axis;

single passage swivel means operatively mounted for movement along said first axis; and

rigid fluid conduit means operatively connecting said fluid motor to said dual passage swivel means, fluid conduit



means operatively connecting said fluid pressure generating system to said single passage swivel means, and rigid fluid conduit means operatively connecting said single passage swivel means to said dual passage swivel means.

3,847,108

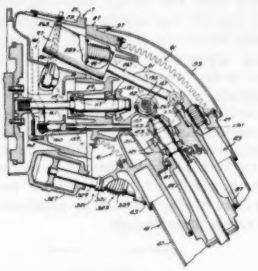
STERN DRIVE UNIT WITH BELLOWS ENCLOSED REVERSING TRANSMISSION AND UNIVERSAL COUPLING STEERING CONTROL

William J. Shimanckas, 2812 Bonnie Brook Ln., Waukegan, Ill. 60085

Filed May 3, 1971, Ser. No. 139,555

Int. Cl. B63h *25/42*

U.S. Cl. 115—35 **29 Claims**

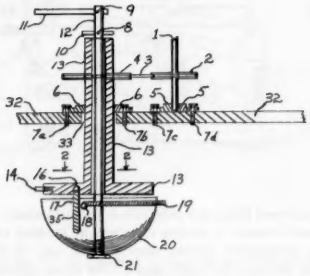


1. A stern drive unit comprising a support adapted to be fixed relative to a boat hull, a housing, means connecting said housing to said support for pivotal movement about a tilt axis which is substantially horizontal when said support is fixed relative to the boat hull, a bellows connected to said support and to said housing, a propulsion leg including a rotatably mounted propeller, means connecting said propulsion leg to said housing for pivotal steering movement about a steering axis perpendicular to said tilt axis, an input shaft extending in said support perpendicularly to said tilt axis, an output shaft journaled in said housing co-axially with said steering axis and in generally co-planar relation to said input shaft and connected to said propeller, a reversing transmission located, at least in part, within said bellows and connected to said input and output shafts for selectively controlling operation of said propeller, and steering means connected to said propulsion leg and extending at least in part within said bellows.

3,847,109
UNDERWATER VANE MOTIVE APPARATUS

Edwin K. Hillman, Phoenix, Ariz., assignor to Wind-De-Go., Inc., Phoenix, Ariz.

Filed Feb. 5, 1973, Ser. No. 329,313
Int. Cl. B63h *1/08*
U.S. Cl. 115—52 **1 Claim**

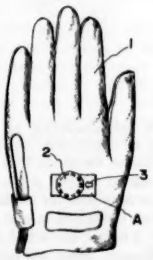


1. An underwater vane propulsion device for a boat comprising, a rotatable shaft extending through the hull of said boat, a sleeve housing journaled about said shaft, a pipe journaled into said sleeve housing about midway of said pipe and transverse to the axis of rotation of said sleeve housing, vanes fixed to the ends of said pipe and comprising, a pair of supports on both ends of said pipe and extending from said pipe at right angles with respect to each other, a membrane support member connected between the ends of each pair of said supports, a rod connected between each pair of said supports and slidable therein, a flexible membrane fixed to said rod and said membrane support, biasing means in said pipe for biasing said rod toward said pipe, said underwater vane propulsion device further comprising a drive means connected to said sleeve housing for rotating same, and a housing fixed to an end of said shaft below the waterline and having cam means thereon for controlling the rotation of said pipe.

3,847,110
GOLF SCORE INDICATOR

Yukio Inoue, 40-10, Kashirvago 4-chome, 362, Ageo City, Saitama Prefecture, Japan

Filed May 2, 1973, Ser. No. 356,491
Int. Cl. A63b *71/06*
U.S. Cl. 116—120 **1 Claim**

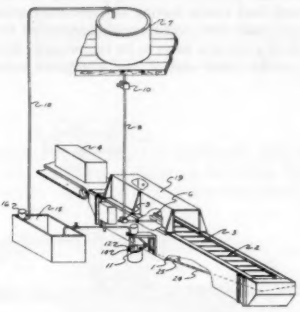


1. A golf score indicator for use with a golf glove comprising: a fabric hook and pile combination including a first member attached to the back of said glove, and a second member having a surface selectively engaged with a corresponding surface on said first member; a rotatable score number indicating disc arranged for rotation on an exposed surface of said second member, said disc having a shaft attached to an under surface thereof at one end thereof, said shaft passing through said second member and having at a second end thereof a planar friction disc mounted thereon, said disc having a friction surface contacting the said surface of said first member, the friction existing between said disc and said first member tending to maintain said score member in given rotational position.

3,847,111
FLOW-COATING APPARATUS

Robert H. Kreutzer, Clarksville, Ind., assignor to General Electric Company, Louisville, Ky.

Filed Sept. 27, 1973, Ser. No. 401,340
Int. Cl. B05b *13/06*
U.S. Cl. 118—2 **4 Claims**



1. An automatic flow-coating apparatus for flow coating a surface of an article with a coating material comprising:

a spray manifold including a plurality of nozzles for providing a continuous upwardly-directed spray of coating material supplied to said nozzle;

a coating material reservoir positioned above said manifold for gravity feeding coating material to said manifold;

a sump below said manifold for collecting coating material flowing from said manifold and means for returning material from said sump to said reservoir;

conveyor means for supporting an article for movement over said manifold and through the sprayed material;

and deflector means movable between a first position and the path of said material flowing from said nozzles and a second position out of the path; and

means responsive to the positioning of said article in a position to be contacted by the sprayed material for moving said deflector means to said second position.

3,847,112
AUTOMATIC HOUSE PAINTER

John D. Wise, 99 E. 33rd St., Paterson, N.J. 07514

Division of Ser. No. 887,806, Dec. 24, 1969, Pat. No. 3,611,983. This application July 13, 1971, Ser. No. 162,106
Int. Cl. B05c *5/00, 1/10*
U.S. Cl. 118—7 **11 Claims**

1. An automatic house painter comprising, a mobile truck including a flat bed and wheel means to provide for movement of the truck along the base of a wall being painted;

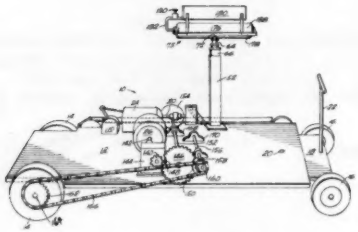
paint applying means, means for mounting said paint applying means atop said flat bed, paint container means and adjustably controlled automatic paint feed means for supplying the paint to said paint applying means from said paint container means;

means for providing a predetermined set pattern of movement of said paint applying means in the vertical direction whereby paint is applied to the entire area of a surface within the range of operation of said paint applying means, said area being defined by the linear distance

traveled by the truck along the base of the wall being painted and a height defined by said predetermined set pattern of movement of said paint applying means in a vertical direction;

said paint applying means comprising a paint brush assembly and said means for mounting said paint applying means comprising a U-shaped bracket fixed to the upper end of said means for providing a predetermined set pattern of movement of said paint applying means in the vertical direction;

said paint brush assembly comprising a brush drive and paint feed motor fixed to said U-shaped bracket, said motor driving a horizontally disposed worm wheel through a worm gear fixed to said motor shaft, a paint brush having an elongated tubular handle having paint brush bristles extending outwardly from the outer end thereof and a piston extending partially into the inner end thereof, said piston having an outwardly extending portion pivotally and eccentrically connected to said worm wheel in a manner so as to be reciprocally moved, in and out, in the inner end of said elongated tubular handle



when said worm wheel is rotated by said drive and feed motor, vertical tubular pivot means mounted in said U-shaped bracket outwardly of said piston, said tubular pivot means interconnecting with and communicating with said tubular handle, a paint supply container receiving the lower end of said vertical tubular means and a first one way check valve in said vertical tubular pivot means whereby paint is drawn upwardly from said paint container through said first one way check valve into said tubular handle during each first 180° of rotation of said worm wheels, a second spring loaded check valve forwardly of said pivot tube which is normally closed during each of said first 180° of rotation, said piston being driven inwardly in the outwardly extending portion of said handle during each second 180° of rotation of said worm wheel closing said first check valve and opening said second check valve to feed the paint drawn into said tubular handle therethrough into said paint brush bristles for application to the surface being painted, each 360° of rotation of said worm wheel imparting one back and forth paint applying movement in a horizontal plane to said paint brush.

3,847,113

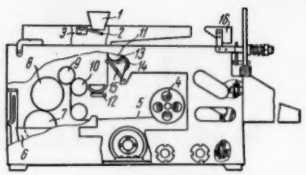
DEVICE FOR RATED PASTING OF INSECT EGGS ON SUBSTRATUM

Sergei Vasilievich Andreev, prospekt Stachek, d. 57, kv. 62, Leningrad; Mikhail Grigorievich Leibenzon, Solnechnogorsky GOM, zavod 4, dom 6, kv. 6, Povarovo; Jry Petrovich Trushin, Dmitrovskoe shosse, 43, kv. 212, Moscow, and Mikhail Sergeevich Luzgin, prospekt Mechnikova, 3, kv. 27, Leningrad, all of U.S.S.R.

Filed Jan. 15, 1973, Ser. No. 323,401

U.S. Cl. 118—40 **6 Claims**

1. A device for rated pasting of insect eggs on a substratum comprising: a roll of the substratum; attachment means for coating the substratum with sticky substance; a bin for the insect eggs; two driving shafts having axles which are mutually parallel and symmetrically-arranged under said bin used to form from the substratum a V-loop which is supplied with the insect eggs from said bin; a limiter restricting the size of the



V-loop formed from the substratum located under said shafts and therebetween; a dosing attachment located on said bin; shaking attachment means disposed on one of said driving shafts for shaking the extra eggs off the sticky substratum; and cutting attachment means for cutting the substratum with the eggs pasted on it into predetermined stretches.

3,847,114

APPARATUS FOR VAPOR DEPOSITION AND ION IMPLANTATION

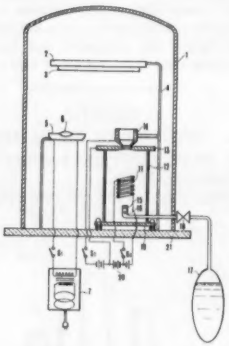
Kentaro Kiyozumi, Ise, Japan, assignor to Ise Electronics Corporation, Ise, Japan

Filed June 1, 1972, Ser. No. 258,568

Claims priority, application Japan, June 9, 1971, 46-41317; July 10, 1971, 46-51238

Int. Cl. C23c *13/12*

U.S. Cl. 118—49.1 **3 Claims**

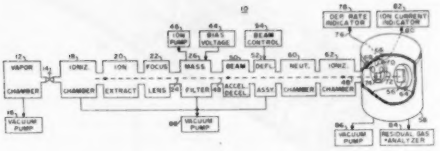


1. Apparatus for manufacturing an electroluminescence element comprising an evacuated vessel, means to support a substrate formed with an electrode film in said vessel, means to evaporate and vapour deposit a phosphor film onto said electrode film, a source of ions for implantation into said film said source being also contained in said evacuated vessel and including a cylinder, a heater contained in said cylinder which operates to emit electrons, means for holding a solid activator disposed to be heated by said heater, means for admitting gaseous activator to said solid activator and disposed to be heated therewith, a perforated anode electrode closing said cylinder, and a cylindrical extraction electrode arranged to cooperate with said anode electrode to extract ions derived from at least one said activator thereby injecting said ions into said vapour deposited phosphor film, and means for electrically energizing said evaporating means and said source of ions.

3,847,115
SYSTEM FOR DEPOSITING THIN FILMS

Philip W. Tashbar, Gaithersburg, Md., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed May 2, 1973, Ser. No. 356,664
Int. Cl. C23c *13/08*
U.S. Cl. 118—49.1 **3 Claims**



1. A system for depositing a thin layer of material on an object comprising:

source means including a vapor chamber having an outlet and means for providing a selected material in vapor form at said outlet;

ionization means for receiving said material in vapor form from said outlet of said vapor chamber and ionizing said material;

mass filter means having a flow path therethrough for passing ionized molcules having a selected mass-to-charge ratio unimpeded along said flow path and removing other ionized molecules from said flow path;

two pairs of spaced, parallel rods wherein a plane symetrically intercepting the longitudinal axis of said rods of a first pair of said rods intersects at a line a plane symetrically interconnecting the rods of the other said pair of rods and said line generally defines said flow path of said mass filter means;

flow control means comprising a source of selectable amplitude voltage of combined direct and radio frequency current, one polarity of said voltage being connected to said first pair of rods and the other polarity of said voltage being connected to said second pair of rods;

whereby a selected amplitude of said voltage is applied to said rods enabling ionized molecules having a selected mass-to-charge ratio to proceed along said flow path and to completely transit said mass filter means and enabling the removal of other molecules from said flow path;

flow control means for receiving ionized molecules from said ionization means and directing them along said flow path of said mass filter;

a deposition chamber adapted to contain an object upon which a selected material is to be deposited; and

flow directional means responsive to the output flow of ionized molecules passed by said mass filter for directing ionized molecules along selected paths into said deposition chamber and onto selected areas of said object;

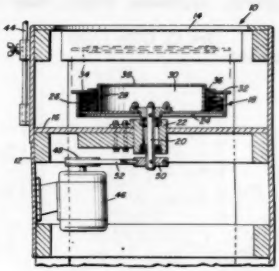
whereby precisely selected molecules of a material may be deposited on precisely selected areas of a said object.

3,847,116
SPINNER FOR APPLYING DESIGNS TO FABRICS

Robert A. Prichard, Mountain Dr., Pleasant Valley, N.Y. 12569

Filed June 3, 1974, Ser. No. 476,162
Int. Cl. B05c *11/12*
U.S. Cl. 118—52 **6 Claims**

1. Spinner apparatus for decorating fabric comprising a turntable unit, said turntable unit including means for receiving and exposing a selected portion of the fabric for reception of decorating liquid thereon, means for enclosing the remaining portions of the fabric for isolation from the decorating liquid, and means for rotatably driving said turntable unit, said means for exposing a selected portion of the fabric including a central chamber defined by a peripheral wall over which the

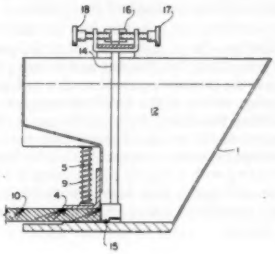


selected portion of the fabric is positioned, said means for enclosing the remaining portions of the fabric including a storage chamber outward of and peripherally about the first-mentioned chamber.

3,847,117
APPARATUS FOR COATING EDGE REGIONS OF PANELS OR BOARDS

Sven Holger Widigs, Morbyvagen 13, 78 10 Gustafs, and Sven-Olof Lindbergh, Tulpangatan 49, 703 53 Orebro, both of Sweden

Filed May 11, 1972, Ser. No. 252,218
Claims priority, application Sweden, May 11, 1971, 6119/71
Int. Cl. B05c *3/02*
U.S. Cl. 118—407 **5 Claims**

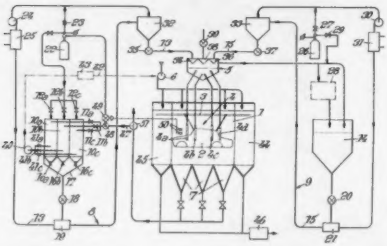


1. Apparatus for coating edge regions of panels or strips, such as chipboards, plywood panels, etc., comprising a container, one side of which is provided with a slit arranged to hold and guide a board or panel to be treated, the slit being limited by a pair of plates adapted to engage the upper and lower faces of the board at least one of said plates being movable and resiliently biased to be pressed against the board, a wiper member located at the outlet end of the slit adjacent the edge of the board, and an applicator member arranged to engage the edge of the board within said container, said applicator member being adjustably mounted to guide the position of the board with respect to the wiper member and the edge of said board to adjust the thickness of the layer applied.

3,847,118
INSTALLATIONS FOR THE COATING OF PARTS BY POWDERING

Gerard Ambry, Fontenay-le-Fleury, France, assignor to Air Industries, Courbevoie, France

Filed May 10, 1973, Ser. No. 358,955
Claims priority, application France, May 16, 1972, 72.017453
Int. Cl. G03g *11/00*
U.S. Cl. 118—602 9 Claims



1. Installation for the coating of parts by powdering, comprising a powdering enclosure shielding the parts to be coated and powdering means, a distributing device situated close to the powdering enclosure and connected to the powdering means, a recovery system adapted to treat the gas extracted from the powdering enclosure and an input system adapted to introduce into the distributing device a quantity of powder corresponding to a part of that delivered by said distributing device to the abovesaid powdering means, in which installation:

the recovery system comprises a plurality of separating cells traversible by the gas extracted from the powdering enclosure and arranged to retain the powder in suspension in this gas, a first set of valves enabling the selective isolation of one at least of these cells, a second set of valves enabling the injection into the cell thus isolated of a neutral gas for purging this cell of the gas contained in it for completing the clearing and cleaning of this cell and to draw the powder retained in this cell towards a recycling pipe ending at the distributing device, this recycling pipe being traversible by a neutral gas for the pneumatic transport of the powder coming from said cell,

and the input system comprises a reserve for powder communicating with a supply pipe ending at the distributing device, said supply pipe being traversible by a neutral gas for the pneumatic transport of the powder coming from said reserve.

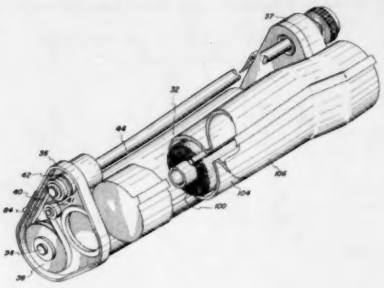
3,847,119
TRANSFER ROLLER ASSEMBLY

Daniel S. Hoffman, and Gilbert E. Koch, both of Rochester, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 27, 1972, Ser. No. 238,045
Int. Cl. G03g *13/00*
U.S. Cl. 118—637 2 Claims

1. In an electrostatographic machine having a movable photoconductive member:

a transfer assembly having a transfer roller mounted proximate to said photoconductive member, a rotary cleaning brush mounted adjacent said roller and having bristles in interferring engagement with the surface of said roller, said roller and said brush being mounted to rotate in the same direction, and means for pivotally supporting said assembly so that said roller can be moved into and out of

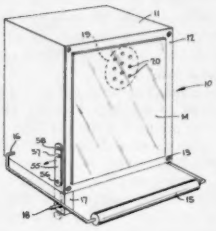


contact with said photoconductive member, said pivotally supporting means permitting said roller and said brush to be moved as a unit.

3,847,120
BIRD TRAINING DEVICE

Wade E. Hicks, 4900 Shirley St., Alexandria, Va. 22309

Filed Feb. 23, 1973, Ser. No. 335,011
Int. Cl. A01k *15/00*, *31/12*
U.S. Cl. 119—29 7 Claims



1. A training device to teach a bird to talk comprising a housing, a sound recording playback unit mounted in said housing, record means having spoken sounds recorded thereon for reproduction by said playback unit, said record means including a magnetic tape formed into an endless band having the spoken sounds recorded thereon for repetition, guiding means positioned adjacent the outer periphery of said housing for carrying said band in an endless path so that said band may be of maximum length, switch means for activating said unit, perch means for the bird mounted on said housing for movement in response to the bird's weight thereon, and means for interconnecting said switch means and said perch whereby to cause switching to the "on" position for activation of said playback unit when the bird is on the perch and playing of the spoken sounds so as to teach the bird to talk.

3,847,121
ANIMAL FEEDER

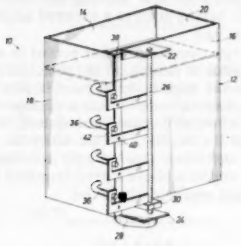
Arthur P. Ruth, P.O. Box 11037, Houston, Tex. 75016

Filed July 25, 1973, Ser. No. 382,286
Int. Cl. A01k *05/02*
U.S. Cl. 119—51.13 10 Claims

1. An animal feed dispenser comprising

a container;

a door in said container having a generally horizontal closed position and an open position, said door defining a feed storage chamber thereabove;
catch means attached to and movable with said door;
a shaft for rotatably mounting said door;
a lead screw;
a travelling nut engaged with said lead screw;
a motor means for rotating said lead screw to advance said nut;



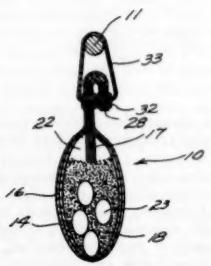
a latch means for latching and releasably holding said catch means to selectively close said door; and,
said latch means being constructed and arranged to form an opening means which receives said catch means, which opening means reaches over said catch means in a manner to hold it against gravity and further including a portion which extends into the path of movement of said travelling nut, and including a pivotal mounting means for said latch means.

3,847,122

LIVESTOCK INSECTICIDE DISPENSING BAG

Maurice O. Gould, Minden, Nebr., assignor to Agricultural Enterprise, Inc., Fremont, Nebr.

Filed May 14, 1973, Ser. No. 359,786
Int. Cl. A01k *29/00*
U.S. Cl. 119—159 **4 Claims**



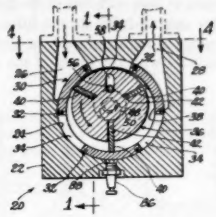
1. A livestock insecticide dispensing bag comprising:
a loosely woven plastic inner ply for holding an insecticide in a powdered form;
a plastic outer ply enclosing said inner ply, said plies having common seam lines and forming an open topped bag;
said inner ply and outer ply being permeable to permit the insecticide to sift therethrough when an animal rubs or butts against said outer ply; and
a plurality of rocks disposed in said inner ply in contact with the insecticide to prevent the caking of same.

3,847,123

ROTARY FLUID POWER DEVICES

Robert L. Vierling, 10255 S. Hoyne Ave., Chicago, Ill. 60643

Division of Ser. No. 699,652, Jan. 22, 1968, Pat. No. 3,511,584. This application Dec. 22, 1969, Ser. No. 887,082
Int. Cl. F02b *55/14*
U.S. Cl. 123—8.45 **18 Claims**



1. A rotary internal combustion engine,
comprising first means forming a generally cylindrical chamber of substantially circular cross section,
a rotor disposed in said chamber,
second means mounting said rotor for rotation about an axis which is eccentric relative to the axis of said chamber,
a plurality of extensible and retractable vanes mounted on said rotor for engaging the inside of said chamber,
said chamber having at least one set of intake and exhaust ports therein,
orbiting means for causing said rotor and its eccentric axis to orbit in said chamber about the axis thereof,
the rotation and orbiting of said rotor causing the extension and retraction of said vanes,
and at least one fuel activator connecting with said chamber for causing periodic combustion of fuel therein in timed relation to the rotation and orbiting movement of said rotor,
said engine including an odd number of said vanes,
said orbiting means including drive means for causing said rotor to orbit at a speed such that the ratio of the orbiting speed to the rotary speed of said rotor corresponds to the number of vanes,
each fuel activator corresponding with a particular set of said intake and exhaust ports and connecting with said chamber at an intermediate point therebetween,
whereby said engine produces a four-stroke cycle involving intake, compression, power and exhaust strokes,
said drive means comprising elements for orbiting said rotor in the same direction as the direction of rotation of said rotor,
said intake and exhaust ports comprising a number of sets of intake and exhaust ports given by the formula $n - 1/2$ wherein "n" is the number of vanes.

3,847,124

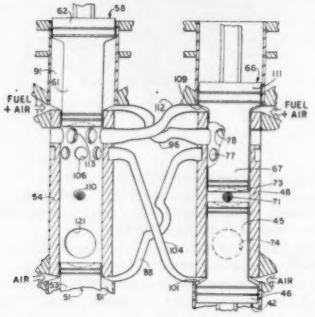
INTERNAL COMBUSTION ENGINE

Louis E. Kramer, 5323 Elk Creek Rd., Madison Township, Butler County, Ohio 45042

Filed Mar. 30, 1973, Ser. No. 346,705
Int. Cl. F02b *25/08, 75/28*
U.S. Cl. 123—51 B **3 Claims**

1. An internal combustion engine which comprises a pair of central tubes, a pair of pistons associated with each central tube, heads of the pistons operating in the central tubes, each of the pistons including an enlarged body portion, cylinders in which the enlarged body portions of the pistons operate, means for connecting the pistons in each central tube to move toward each other and away from each other in unison and for causing the pistons associated with one central tube to move

toward each other as the pistons associated with the other central tube move away from each other, exhaust ports in the central tubes which are opened when the pistons associated therewith are in a partly retracted position, air-injection openings in the central tubes which are opened when the pistons associated therewith are in a further retracted position, and fuel-injection openings in the central tubes which are opened when the pistons associated therewith are in a still further retracted position, means for connecting the air-injection openings of each central tube with one of the cylinders associated with the other central tube, means for connecting the fuel-injection openings of each central tube with the other of the cylinders associated with the other of the central tubes,



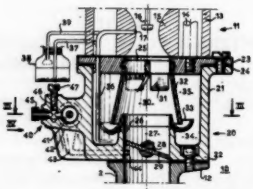
means for permitting air to enter the cylinders which are connected to the air injection openings but for preventing exit of the air therefrom, and means for permitting a fuel-air mixture to enter the cylinders which are connected to the fuel-injection openings and for preventing exit of the fuel-air mixture therefrom, whereby the air is compressed in the cylinders connected to the air-injection openings and is injected into the central tubes after the exhaust openings have been opened to clear the products of combustion from the central tubes, and the air-fuel mixture is compressed in the cylinders connected to the fuel injection openings and is injected into the central tubes after the products of combustion have been cleared therefrom.

3,847,125

CARBURETOR

Alfred Andre Malherbe, 81 rue Pasteur, Waziers 59119, France

Filed Jan. 26, 1973, Ser. No. 327,085
Claims priority, application France, Jan. 27, 1972, 72.2727
Int. Cl. F02b *25/06*
U.S. Cl. 123—119 A **17 Claims**



1. Apparatus for supplying a combustion mixture to an internal combustion engine, particularly an automobile engine, subject to anti-pollution regulations comprising:

a. a principal device designed to supply the engine, while cruising and accelerating, which has located downstream of the conventional means of atomizing fuel in the intake air to the motor, static elements to dry the intake mixture by centrifugal action due to the velocity of flow, and subsequent means to collect and eventually recycle excess fuel and eliminate collected impurities,

b. an auxiliary device designed to supply the engine, when idling, which contains, in addition to the conventional means of proportioning a mixture of fuel with a small flow of primary air, means of heating the mixture, and of adding to the heated mixture a metered amount of fresh secondary air, and

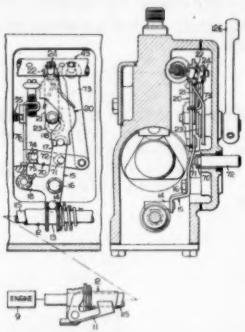
c. a control device consisting, in one part of an accelerating butterfly capable of closing off the principal device from the intake to the engine and in another part of an automatic three way valve by which a passage discharging downstream of the aforementioned butterfly is selectively connected to the auxiliary device when the butterfly is not closed, and when the butterfly is closed, and the speed of the engine is above a predetermined limit, to the exhaust of said engine.

3,847,126

INJECTION TIMING MODULATOR

Alexander Dreisin, Olympia Fields, Ill., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 1, 1973, Ser. No. 402,608
Int. Cl. F02m *59/28, 59/20*
U.S. Cl. 123—140 R **10 Claims**



1. A multiple plunger fuel injection pump for an internal combustion engine comprising, a pump housing means defining a plurality of bores, a plunger received in each of said bores and defining a fuel injection pumping chamber, means defining a fuel supply chamber, each of said plungers defining passage means selectively communicating between the supply chamber and the injection pumping chamber for supplying fuel to said injection pumping chamber, a control sleeve mounted for reciprocable and rotational movement about each of said plungers and defining port means with said plunger for controlling the closing and opening of said passage means in said plunger between the supply chamber and the fuel injection pumping chamber, means sequentially reciprocating each of said plungers in said bores for pumping fuel in said fuel injection pumping chamber, a speed responsive device adapted for connection to an engine including a control member moving in response to engine speed, a drive lever defining a drive arm, a timing arm and a quantity control arm, means connecting said drive arm to said control member of said speed responsive device, a control rod connected to each of said control sleeves providing rotational and reciprocating movement of said control sleeves, a quantity control linkage

connected between said quantity control arm and said control rod reciprocating said control rod and rotating said control sleeves, a throttle control pivotally connected to said quantity control linkage to modify movement of said control rod in response to movement of said throttle control, a timing linkage connected between said timing arm and said control rod rotating said control rod and reciprocating said control sleeves, a variable fulcrum timing modulation lever in said timing linkage for modifying fuel injection timing, said linkages thereby controlling the quantity, timing and modulation of fuel delivery from said fuel injection pump.

3,847,127

CENTRIFUGAL RPM GOVERNOR FOR FUEL INJECTED INTERNAL COMBUSTION ENGINES

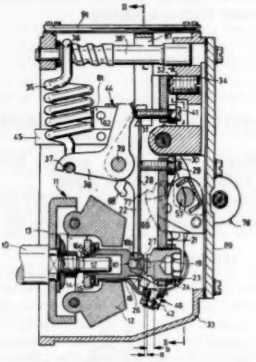
Heinrich Staudt, Markgroningen-Talhausen, Germany, assignor to Robert Bosch GmbH, Stuttgart, Germany

Filed Dec. 4, 1973, Ser. No. 421,586

Claims priority, application Germany, Dec. 5, 1972, 2259428

Int. Cl. F02d 1/04

U.S. Cl. 123—140 R **8 Claims**



1. In a centrifugal rpm regulator for fuel injected internal combustion engines, especially diesel engines, including a housing mounting; centrifugal weight means, an adaptor sleeve slidably displaceable under the influence of the centrifugal weight means and as a function of engine rpm, an intermediate lever, a fuel quantity control rod, the adaptor sleeve transmitting the forces associated with its controlled motions resulting from its slidable displacement through the intermediate lever to the fuel quantity control rod for adjusting the fuel quantity delivered by an injection pump used in conjunction with the regulator, an abutment structure which serves to limit the movement of the control rod in the direction of increasing fuel supply, the abutment structure being fixedly connected to the regulator housing and being pivotable as a function of engine rpm to thereby determine the maximum fuel quantity, and means coupling the adaptor sleeve to the abutment structure, the abutment structure having a cam plate including a cam sector that determines the starting excess fuel quantity and also the full load fuel supply quantity, a shaft on which the cam plate is mounted, a cam follower member, and means connecting the cam follower member to the control rod, the cam follower member being adapted to abut the cam sector whenever the maximum fuel supply quantity corresponding to a particular rpm is delivered, the improvement comprising:

a. a further cam plate, wherein the cam plate of the abutment structure and said further cam plate constitute a first and second cam plate, respectively, said second cam plate being mounted on the shaft mounting the first cam plate to be parallel therewith and rotatable independently thereof, said second cam plate also being adapted to operatively engage with the cam follower member; and

b. a control apparatus which functions in dependence on the temperature of an operating medium such that when an operating medium temperature is reached which corresponds to an operationally warmed-up engine a portion of the second cam plate blocks the cam sector of the first cam plate from being engaged by the follower member thereby preventing the delivery of a starting excess fuel quantity, and when the operating medium temperature reached is below a temperature which corresponds to an operationally warmed-up engine, the cam follower member abuts the cam sector of the first cam plate so that at least a partial starting excess fuel quantity is delivered.

3,847,128

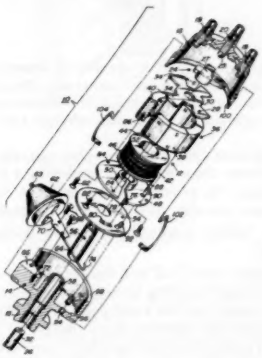
GASOLINE VAPORIZER APPARATUS

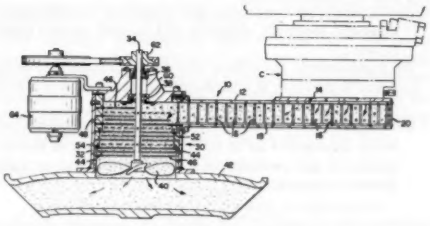
John J. Palotsee, 330 E. Front St., Youngstown, Ohio 44503

Filed Mar. 30, 1973, Ser. No. 346,461

Int. Cl. F02m 29/00

U.S. Cl. 123—141 **8 Claims**





1. A device for improving the fuel-air mixture for a combustion engine and comprising

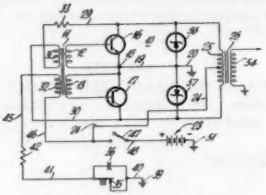
a conduit for connection to a carburetor to receive an air-fuel mix therefrom, said conduit having a number of fingers operatively positioned therein normal to the path of flow of the air-fuel mix to aid in breaking up any liquid fuel particles carried by the air-fuel mixture, and

a means connected to said conduit to receive the air-fuel mix therefrom and including a vertically positioned housing, a driven center shaft suspended in said housing and having a fan member secured to its lower end to aid in drawing the air-fuel mix down through the housing, a set of radially extending fingers carried by said shaft in axially and circumferentially spaced positions thereon, a second set of fingers secured to said housing and extending radially thereof and positioned axially intermediate the members of the first set of fingers to agitate the air-fuel mixture and further break up any liquid fuel particles; the lower end of said housing being connectable to a manifold of a combustion engine.

3,847,129
IGNITION SYSTEM UTILIZING A SATURABLE-CORE SQUARE WAVE OSCILLATOR CIRCUIT

Robert Eugene Canup, Chester, Va., assignor to Texaco Inc., New York, N.Y.

Continuation-in-part of Ser. No. 38,279, May 18, 1970, abandoned. This application Mar. 2, 1973, Ser. No. 337,509
Int. Cl. F02p *3/02*
U.S. Cl. 123—148 E **6 Claims**



1. In an ignition system for use with an internal combustion engine having breaker points associated therewith for mechanically determining the timing of initiation of an ignition spark for a cylinder of said engine, wherein said system comprises

a saturable-core square wave oscillator having a fundamental oscillator frequency and employing a saturable-core transformer to provide electromagnetic feedback coupling and providing relatively high frequency electrical energy having continuing duration during oscillation thereof,

means under control of said breaker points for saturating said feedback coupling with steady magnetic flux to stop said oscillator and for cutting off such flux to cause rapid starting of said high frequency energy,

an output transformer having a high turns ratio for supplying energy to said ignition spark,

a pair of transistors, and

circuit means for connecting said transistors to said electromagnetic feedback coupling and to said output transformer,

the improvement comprising said output transformer being tuned to resonate at a harmonic frequency of said fundamental oscillator frequency at no load, and

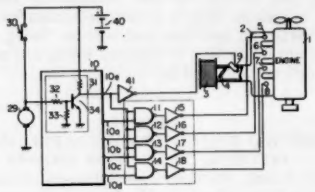
the magnetic properties of said saturable-core transformer being determined so as to cause an increase in the frequency of said oscillator as the load on said output transformer increases.

3,847,130
ELECTRICAL FUEL INJECTION SYSTEM FOR INTERNAL COMBUSTION ENGINES

Takeo Miyoshi, Toyota; Kazu Majima; Tetsuo Yamagata, both of Kariya; Susumu Harada, Okazaki, and Motoharu Sueishi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Aichi-ken and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota-shi, both of, Japan

Filed Aug. 22, 1972, Ser. No. 282,663
Claims priority, application Japan, Aug. 23, 1971, 46-64293
Int. Cl. F02n *17/00;* **F02b** *3/00*
U.S. Cl. 123—179 L **6 Claims**

1. In an electrical fuel injection system for internal combustion engines wherein the fuel requirement of an engine is electrically computed by an electronic computing circuit so that the regular electromagnetic injection valves are energized to inject the fuel by pulse signals the time width of which corresponds to the fuel requirement, and wherein a starting electromagnetic injection valve is provided to atomize and inject, independently and exclusively of the regular electromagnetic injection valves, an engine starting fuel when starting the engine, the combination comprising a start detector for detecting the start of the engine and for generating an output signal, and a circuit means connected with said start detector

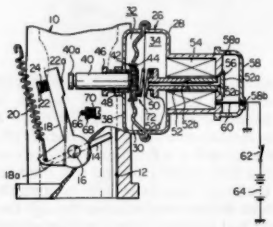


for receiving said output signal of said start detector for preventing the operation of the regular electromagnetic injection valves and for energizing only the starting electromagnetic injection valve to thereby provide an atomized fuel to said engine when said engine is starting.

3,847,131
THROTTLE OPERATING MECHANISM FOR CARBURETOR

Takashi Hisatomi, Tokyo, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed June 5, 1973, Ser. No. 367,151
Claims priority, application Japan, June 6, 1972, 47-67071
Int. Cl. F02b *77/00*
U.S. Cl. 123—198 DB **7 Claims**

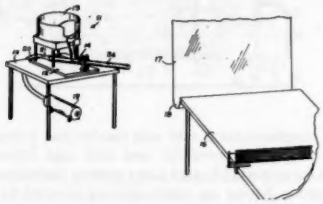


1. A throttle operating mechanism for a carburetor of an internal combustion engine, comprising a throttle actuating arm rotatable with a carburetor throttle valve to vary throttle opening and biased in a direction to close said carburetor throttle valve, a diaphragm disposed in a casing to define first and second chambers therein and having a check valve providing communication therebetween, an electromagnetically controlled plunger means connected to one side of said diaphragm and movable therewith, said plunger means having formed therein an air passage communicating with one of said first and second chambers, and an actuating rod connected to the other side of said diaphragm and movable therewith, said throttle actuating arm having an end portion engageable with said actuating rod, said air passage being closed by a valve head formed on said plunger means when the same is moved in one direction whereby movements of said actuating rod and accordingly said diaphragm are dampened whereas, when said plunger means is moved in another direction, said air passage is opened to release dampening effect thereby to allow quick return of said actuating rod.

3,847,132
TABLE-TENNIS BALL THROWING MACHINE USING AIR PROPULSION

Milton C. Schatz, 209 N. Fifth St., Eldridge, Iowa 52748

Continuation-in-part of Ser. No. 204,096, Dec. 2, 1971, abandoned. This application Sept. 17, 1973, Ser. No. 397,695
Int. Cl. F41f *1/04*
U.S. Cl. 124—11 R 6 Claims

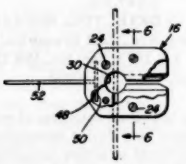


1. A pneumatic ball-throwing machine comprising:
a ball-propelling tube, one end of said tube being an inlet adapted to be attached to an air-blowing device, the other end of said tube being an outlet pointed in the direction balls are to be thrown, a chute through which balls are to be supplied to said outlet, said chute joining said propelling tube at a point intermediate its ends, a receptacle for balls mounted above said ball-propelling tube, said chute extending from said propelling tube upwardly to an outlet in the bottom of said receptacle, mechanical gating means in the outlet of said receptacle operable repeatedly to permit balls to fall one at a time from said receptacle to said ball-propelling tube,
said mechanical gating means comprising a notched disk, the continuous portion of the edge of said disk extending across said outlet of said receptacle, the edge of said disk having at least one notch, the width of said notch in the circumferential direction of said disk being greater than the diameter of the balls to be served and the depth of the notch from the edge of the disk being sufficient to allow a ball to pass to said chute while said notch is across said outlet of the receptacle, and means for rotating said disk at a predetermined rate to feed balls from said receptacle to said chute at desired intervals.

3,847,133
BOWSTRING WITH MOUNTED ARROW NOCK HOLDER

Waldemar K. Awiszus, East Detroit, Mich., assignor to Exacto, Inc., East Detroit, Mo.

Filed June 23, 1972, Ser. No. 265,679
Int. Cl. F41b *5/00*
U.S. Cl. 124—30 R 6 Claims

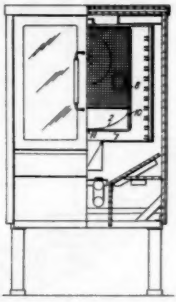


1. In a combination comprising a bowstring and an arrow nock holder, said holder defining a body including two mating pieces clamped together about said bowstring to prevent shifting along the latter and located in a predetermined selected position thereon, said holder body including front and rear sides, the front side of said holder body having a means formed therein for receiving and frictionally gripping the rear end of an arrow nock therein, said holder body having an additional means extending rearwardly and being formed in the shape of a loop so as to be releasably gripped for drawing the bowstring, said additional means including a forward portion anchored between said mating pieces.

3,847,134
OVENS

William J. W. Booker, London, England, assignor to Oliver Tom's Catering Equipment Limited, London, England

Filed Mar. 1, 1973, Ser. No. 337,180
Int. Cl. F24c *15/32*
U.S. Cl. 126—21 A 1 Claim

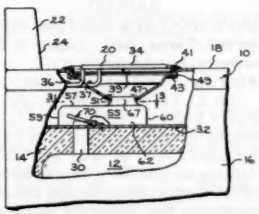


1. A forced air oven having means for circulating air therein, a plurality of gas jets being adapted to heat at least an air space below the base of the oven, the air from such space first flowing through channels formed between outer walls of the oven and then escaping through a vent, the means for circulating air being a fan driven by an electric motor, a baffle being mounted at the wall of the oven bearing the fan and being formed of a curved elongate strip member, the baffle being mounted substantially symmetrically of a vertically downwardly extending segment from the centre of the fan, the lower part of the baffle being at a greater radial distance from the centre of the fan than the ends thereof, and in which the baffle is mounted so as to present a main surface area thereof to air expelled radially from the fan, in use of the oven.

3,847,135
HINGED ADAPTER DUCT FOR OVEN VENT

George R. Sherman, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Feb. 4, 1974, Ser. No. 439,548
Int. Cl. F24c *15/32*; A21b *1/00*
U.S. Cl. 126—21 R 5 Claims



1. The combination of a first vertical oven vent duct, a generally horizontal support surface adjacent the top of the

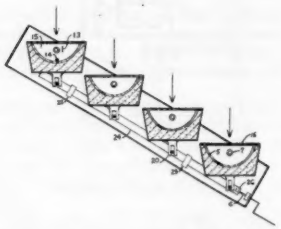
vent duct, a second vertical duct located above the first duct but horizontally offset therefrom, and a horizontal adapter duct supported from the said support surface and joining the first vertical vent duct and the second vertical duct, the bottom portion of said adapter duct being open, and an offset hinge means connected at one end to the said support surface at a point beneath the second vertical duct and connected at the other end to the adapter duct at a point on the far side of the first vertical vent duct, whereby the adapter duct may be lifted at one end adjacent the second vertical duct which causes the hinge means to swing in an arc thereby raising the adapter duct and causing it to extend generally vertically so that it may be cleaned through its open bottom portion.

3,847,136

SOLAR WATER-HEATING SYSTEMS

Napoleon Paul Salvail, 830 Margie Dr., Titusville, Fla. 32780

Filed July 27, 1973, Ser. No. 383,194
Int. Cl. F24j *3/02*
U.S. Cl. 126—271 **3 Claims**



1. In a solar heat collector, a frame comprised of a plurality of fluid transfer tubes in perpendicularity to end support structures; a fluid transfer tube having a stiff self-supportive semicylindrical member mounted thereon; said fluid transfer tube having a bearing supporting the semicylindrical member and allowing rotation of the member about the fluid transfer tube; said bearing also sealing the hollow semicylindrical member; said bearing comprising

a first bearing piece rigidly attached to the end of a semicylindrical member and extending outwardly therefrom; said first bearing piece being concentrically and rotatably disposed about said tube; and

a second bearing piece rigidly attached to said support structure also concentrically disposed about said tube; said second bearing piece having an annular recess into which said first bearing piece extends for support thereby, while providing a sealed, low friction bearing surface between said first and second bearing pieces, said first bearing piece being in abutting relationship with the bottom of said annular recess.

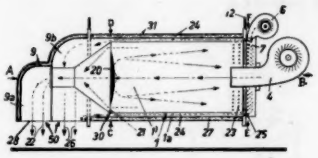
3,847,137

MELTING EQUIPMENT FOR MELTING SNOW AND ICE

Oreste Lambertoni, Varese, Italy, assignor to Pages Holding S.A., Luxembourg, Luxembourg

Filed Apr. 2, 1973, Ser. No. 346,810
Int. Cl. E01c *11/24*; **E01h** *5/10*
U.S. Cl. 126—271.2 A **4 Claims**

1. A machine for the melting of snow and ice, said machine comprising an outer sleeve, an inner wall within said outer sleeve and defining therebetween an intermediate chamber, said inner wall being generally cylindrical and defining a combustion compartment, heat producing means at one end of said combustion compartment for directing heated gases axially into said combustion compartment, a pre-compartment at said one end of said outer sleeve in communication with both said intermediate chamber and said combustion compartment for supplying air thereto to externally cool said inner wall and to be utilized within said combustion compartment, and a hood at the opposite end of said outer sleeve for directing heated gases towards ice and snow to be melted, said hood



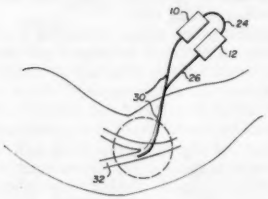
being in communication with said combustion compartment for receiving gases therefrom and with said intermediate chamber for receiving heated gases passing therethrough, the hood member having an outlet opening covered by a heat-resistant perforated plate.

3,847,138

METHOD AND SYSTEM FOR CONTROLLED AUTOMATED ADMINISTRATION OF DRUGS TO PATIENTS

Seymour Gollub, 123 Church St., Teaneck, N.J. 07666

Filed Mar. 14, 1973, Ser. No. 341,229
Int. Cl. A61b *6/00*; **A61m** *5/00*
U.S. Cl. 128—1.1 **21 Claims**



1. A method for monitoring a characteristic of a patient and automatically administering a substance to the patient based on such monitoring, which comprises administering a radioactive substance to a patient, monitoring the radioactivity in said patient and automatically administering a therapeutic drug to the patient, said administering being directly responsive to said monitoring.

3,847,139

DEVICE FOR AID IN DETECTING BREAST CANCER

Eric Flam, 29 Ainsworth Ave., East Brunswick, N.J. 08816

Filed Apr. 13, 1973, Ser. No. 350,753
Int. Cl. A61b *10/00*
U.S. Cl. 128—2 H **19 Claims**

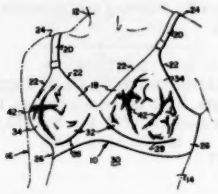
1. A device for aid in the visual detection of malignant tissue in the breast of a woman, said device comprising:

a body contoured garment structure including

a substrate of stretchable conformable material having an obverse surface which can be viewed when the device is worn over the breast and a reverse surface which conforms essentially to the contour of the breast to contact the breast essentially over the breast surfaces to be examined by virtue of the stretchable conformable nature of the material;

means for affixing the substrate over the breast surfaces to be examined; and

a temperature-responsive coating on portions of the obverse surface of the substrate constituting a means for enabling



the substrate to maintain a stretchable conformable nature while permitting the substrate to remain coated;

said stretchable conformable material being sufficiently thin to enable the transfer of heat from said breast surfaces to the coating.

3,847,140

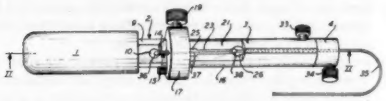
OPERATING HANDLE FOR SPRING GUIDES

Robert J. Ayella, Lutherville, Md., assignor to United States Catheter & Instrument Corporation, Glens Falls, N.Y.

Filed Dec. 16, 1971, Ser. No. 208,583

Int. Cl. A61m *25/00*; **A61b** *05/02*

U.S. Cl. 128—2 M **14 Claims**



1. A handle for a flexible, elongated controllable tip spring guide having a tubular guide body and a core wire projecting from the proximal end of said guide body, said handle comprising:

a hand grip located at a first, proximal end of the handle, said hand grip having circumferential and axial dimensions such that said hand grip can be held substantially within the palm of the hand of an operator;

an intermediate assembly rotationally and non-slidably mounted in a generally coaxial relationship with the hand grip, the intermediate assembly including a core having at a first, proximal end thereof a cylindrical end portion rotatably engaged in the distal end of the hand grip, the core further having a middle block portion and a distal rod portion coaxial with the cylindrical end portion, the distal rod portion extending axially of the hand grip, the rod portion being longitudinally grooved, said block portion having a radially disposed hole in the plane of said groove, and said hole being connected to said groove by a slit narrower than the diameter of said hole whereby a lug on the end of one of said guide body and a core wire can be retained within said hole with the core wire passing through said slit and said groove;

means on the intermediate assembly for retaining the spring guide along the axis of said handle such that the distal end of said spring guide extends beyond the distal end of the rod portion of the core;

means mounted on said intermediate assembly for rotationally positioning said intermediate assembly; and,

a slidable carriage slidably and non-rotationally mounted on the intermediate assembly so as to permit axial positioning of said carriage on said assembly, said slidable carriage having means for engaging the other one of said guide body and core wire.

3,847,141

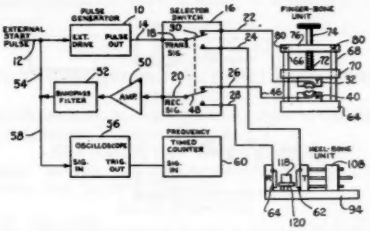
ULTRASONIC BONE DENSITOMETER

James M. Hoop, Hazel Green, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Aug. 8, 1973, Ser. No. 386,789

Int. Cl. A61b *10/00*

U.S. Cl. 128—2 V **5 Claims**



1. An apparatus for measuring the density of a bone structure so as to monitor the calcium content thereof comprising:

a. A pair of opposed spaced ultrasonic transducers, one acting as a transmitter and the other acting as a receiver;

b. a clamping means supporting said transducers in spaced relation for accommodating said bone structure to be examined therebetween;

c. said clamping means including means for positioning said bone structure in a constant orientation with respect to said pair of opposed spaced ultrasonic transducers;

d. means for regulating the pressure applied by said pair of opposed spaced transducers on said bone structure being examined;

e. a pulse generator means coupled to said transmitter transducer generating an electric pulse for causing said transmitter transducer to generate an ultrasonic sound wave which is directed through said bone structure to said receiver transducer;

f. an electrical circuit means coupled between said receiver transducer and said pulse generator for retriggering said pulse generator responsive to said receiver transducer receiving said ultrasonic sound wave; and

g. frequency indicating means coupled to said circuit means;

whereby the frequency that said pulse generator is retriggered is proportional to the duration that said ultrasonic wave takes to travel through said bone being examined which varies according to the calcium content of said bone being examined.

3,847,142

BLOOD FLOW MEASURING APPARATUS AND METHOD

Redford B. Williams, Jr., 2748 Middleton St., Durham, and John W. Hartwell, Hillsborough, both of N.C., assignors to said Williams, by said Hartwell

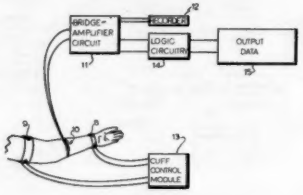
Filed Aug. 30, 1973, Ser. No. 393,203

Int. Cl. A61b *5/02*

U.S. Cl. 128—2.05 F **6 Claims**

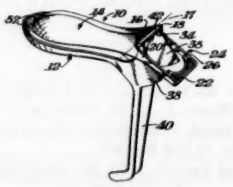
1. A portable apparatus for determining the rate of blood flow in a limb comprising, in combination:

a. first occluding means mountable on the limb for occluding blood flow to the extremity of the limb distal to where said first occluding means is mounted;
b. second occluding means mountable on the limb proximal of said first occluding means for occluding venous outflow from the limb distal to where said second occluding means is mounted while allowing arterial inflow to continue substantially unimpeded;
c. occluding control means connected to said first and second occluding means and adapted to cause said occluding means to occlude in the manner stated;
d. measuring means mountable on the limb between said first and second occluding means and productive of an electrical signal responsive to the change in circumference of said limb between said occluding means when so mounted and when said occluding means are occluding in the respective manner stated;



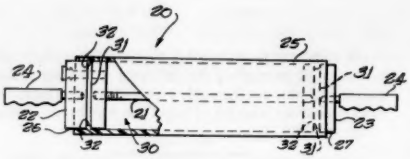
e. electrical analyzing circuit means connected to said measuring means, said analyzing circuit means including logic circuit means for receiving and performing arithmetic operations upon electrical signal inputs, said analyzing circuit means further including means to generate and transmit to said logic circuit means electrical signal inputs representative of the circumference of the limb at the point of application of said measuring means, and representative of a change in circumference of known amount, said logic circuit being adapted to receive and combine said electrical signal from said measuring means over a predetermined time period with said electrical inputs and to convert said electrical signal and inputs to a numerical form representing the rate of blood flow required to produce such change in such period of time; and
f. portable housing means mounting said analyzing circuit and occluding control means and mounting connecting means for connecting said first and second occluding means and said measuring means to the appropriate said analyzing circuit and occluding control means.

3,847,143
SPECULUM
John Cotey, Haddonfield, N.J., and Jean R. Poirier, Frederick, Md., assignors to Medspecs, Inc., Frederick, Md.
Filed May 1, 1973, Ser. No. 356,178
Int. Cl. A61b *1/32*
U.S. Cl. 128—17 **17 Claims**



1. A speculum which facilitates the examination of certain body passages comprising:
first and second members each having an elongated blade with a convex outer surface and a rear portion, and
flexible means for pivotal movement of said blades about said rear portions between spread and closed positions, said flexible means being integral with at least one of said members and fixedly interconnected with the other of said members for disposing said members in side-by-side relationship.

3,847,144
REDUCING ROLLER DEVICE
Richard E. Wright, 2212 Locust St., Quincy, Ill. 62301
Filed June 27, 1973, Ser. No. 373,987
Int. Cl. A61h *15/00*
U.S. Cl. 128—57 **2 Claims**



1. A reducing roller device comprising:
a pair of longitudinally spaced parallelly extending flat discs, each disc provided with a circumferally extending groove about its periphery intermediate the sides of the discs;
a pair of handles each disposed centrally of an associated disc in a manner projecting axially outwardly therefrom, one end of each of the handles rotatably connected to the associated disc in a manner permitting rotation of the disc about its axis relative to the handle;
a longitudinally extending elongated supporting shaft interconnecting the innermost confronting side surfaces of the pair of discs for positively retaining the same at a present longitudinal spacing;
a tubular member of flexible yieldable material adapted to extend between and overlap the periphery of each of the discs, the ends of the tubular member each having an inner diameter of a size and configuration adapted to be placed over the periphery of each disc and secured thereto for effecting rotation of the tubular member about its axis simultaneously with the rotation of each of the discs, the tubular member having an inwardly directed circumferentially extending bead formed about the inner surface thereof near each end thereof and adapted to seat in one of the grooves in the disc to maintain the tubular member thereon; and
whereby the handle members may be grasped in the two hands of an individual with the outer circumference of the tubular member pressed against an individual's skin in a manner to conform to the contours thereof and be rolled thereagainst in a reciprocal manner to assist in elimination of flabby skin conditions and to enhance muscle tone.

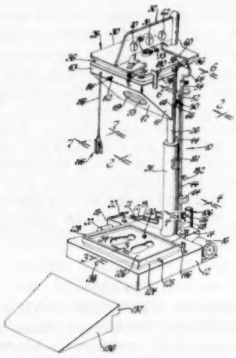
3,847,145
NASAL IRRIGATION SYSTEM
Murray Grossan, 8930 Sepulved Blvd., Beverly Hills, Calif. 90045
Filed Apr. 13, 1973, Ser. No. 350,839
Int. Cl. A61h *9/00*
U.S. Cl. 128—66 **9 Claims**

1. In a system for enhancing the draining of mucopus from a person's sinuses and for expelling it from the nose, the provision of:

means for supplying to one nostril, the other nostril being open and the user's face being generally horizontally

oriented, a flow of an isotonic saline solution pulsating in pressure between 0 and less than 10 psi at a frequency of at least 100 cycles per minute.

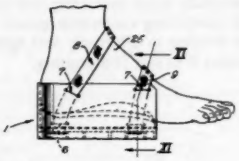
3,847,146
THERAPEUTIC APPARATUS AND METHOD
Walton W. Cushman, 36483 Gloucester, Fraser, Mich. 48026
Filed Dec. 11, 1972, Ser. No. 314,200
Int. Cl. A61h *1/02*
U.S. Cl. 128—75 **27 Claims**



1. A method of traction therapy for a human patient, comprising the steps of establishing a seal about the upper portion of the patient's head, creating a pressure differential across said seal, with the lower pressure above said seal and the higher pressure below said seal, increasing said pressure differential to a value sufficient to cause the higher pressure acting upon the patient's body below said seal to move the patient by his head toward the lower pressure side of said seal thereby causing a traction force to be applied along the spinal column of said patient, and anchoring the patient's lower extremities while applying the pressure differential at the patient's head.

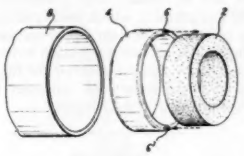
3,847,147
FOOT SUPPORT
Richard E. Turner, P.O. Box 95, Mineral Wells, Tex. 76067
Filed Apr. 25, 1973, Ser. No. 354,282
Int. Cl. A61f *5/04*
U.S. Cl. 128—83.5 **5 Claims**

1. In a foot support, a receptacle having a bottom wall, an open end, and an upstanding flange extending thereabout; a flexible liner of resilient foam material encased in plastic material disposed in the receptacle, said liner having a flat side and a rounded side; impervious plastic adhered to the flat side; friction discs on the outer surface of the impervious plastic material, said discs being arranged to be pressed against the



surface of the wall to retain the liner therein; and means to detachably attach the receptacle and the liner together and extendable about the foot of a wearer to attach same to the foot.

3,847,148
DEVICE FOR PROVIDING HEAT INSULATION AT HIGH TEMPERATURES
Alfonse Peuchmaur, Boulogne, France, assignor to Commissariat A L'Energie Atomique, Paris, France
Filed Sept. 5, 1972, Ser. No. 286,428
Claims priority, application France, Sept. 9, 1971, 71.32546; Dec. 30, 1971, 71.47489
Int. Cl. F16l *59/12*
U.S. Cl. 138—178 **10 Claims**



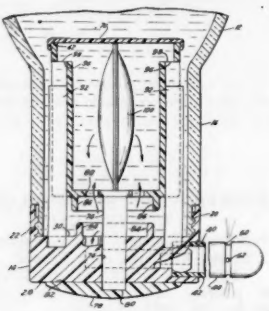
1. A heat-insulating device for a tubular duct comprising at least one annular element, each of said annular elements including therein a hollow-walled, deformable sleeve, and a cylindrical ring of ceramic material having a low coefficient of thermal expansion, a high elastic limit of compression and a low coefficient of thermal conductivity pressed against the inner surface of the sleeve and means for injecting a fluid under pressure into said sleeve to prestress said ring.

3,847,149
HYGENIC DOUCHE SYSTEM
Jerome L. Murray, 652 First Ave., New York, N.Y. 10016, and Frances R. Gardiner, 43 Park Rd., Sparta, N.J. 07871
Continuation-in-part of Ser. No. 231,336, March 2, 1972, which is a continuation-in-part of Ser. No. 197,848, Nov. 11, 1971, Pat. No. 3,756,230. This application Aug. 31, 1973, Ser. No. 393,660The portion of the term of this patent subsequent to Sept. 4, 1990, has been disclaimed.
Int. Cl. A61m *3/00*
U.S. Cl. 128—225 **8 Claims**

1. A hygienic douche apparatus comprising:
a container open at one end adapted to hold a quantity of liquid,
a closure member for sealing said open end of said container,
means defining a chamber within said container when said closure member is in sealing relationship on said container comprising a housing slidably disposed with respect to said closure member and movable between a first sealed position and an unsealed second position,

said chamber adapted to hold a predetermined quantity of a compound capable of generating gas pressure to dispel completely the said quantity of liquid from said container when said compound is contacted by said liquid,

means cooperable with said housing for sealing said chamber to preclude liquid contacting said compound in said chamber comprising cooperable means on said closure and said housing to effectively seal said chamber when said housing is in said first position,



means operable from the exterior of said chamber to move said housing from said first position to said second position to cause liquid within said container to enter said chamber and to contact said compound and generate sufficient gas pressure within said container to dispel the quantity of liquid from said container, and

means affording fluid communication between the interior of said container and the exterior for the passage of said quantity of liquid from said container after said compound is contacted by said liquid.

3,847,150

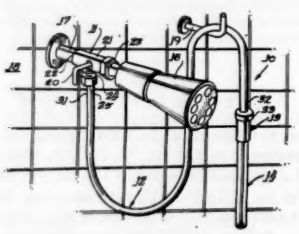
DOUCHE APPARATUS

Henry Scheuermann, 5800 S.W. 44 Ter., Miami, Fla. 33155

Filed July 30, 1973, Ser. No. 383,723

Int. Cl. A61m *3/00*

U.S. Cl. 128—229 **1 Claim**



1. A douche apparatus intended for use with a shower head assembly comprising:

a control valve adapted to be connected intermediate the shower head and a pipe providing a pressure and temperature adjustable source of water to the shower head, the control valve having an inlet opening adapted to be connected to the pipe, a first outlet opening adapted to be connected to the shower head, and a second outlet opening, the valve being operable between a shut off position, a shower position placing the inlet opening in closed communication with the first outlet opening for operation of the shower head, and a douche position placing the inlet opening in fluid communication with the second outlet opening,

a flexible elongated hose like member having one end connected to the second outlet opening of the control valve; an elongated hollow cartridge receiving mixing member having opposed end portions with an accessible inner chamber defined therebetween, the cartridge receiving mixing member being of a cylindrical configuration having a cylindrical body portion defining a cylindrical inner chamber for receiving a cartridge therein, a first end of the receiving member being open and threadedly connected to the opposite end of the hose in a removable manner permitting access to the inner chamber, and placing the chamber in fluid communication therewith, the chamber adapted to receive a water dissolvable chemical disinfectant type cartridge therein, the second end of the receiving member being threaded to receive therein a threaded first end of an applicator nozzle;

a hollow applicator nozzle having a first open end threadedly connected to the second end of the cartridge receiving mixing member and in fluid communication therewith, the applicator nozzle being of an elongated tubular configuration having a closed dome shaped second end of a size and configuration adapted for insertion into the vagina and having a plurality of perforations spaced completely thereabout for dispensing the stream of combined water and dissolved chemical disinfectant solution therethrough; and

a cylindrical cartridge holding member adapted for insertion axially of the cartridge receiving member, the cartridge adapted to be filled with a granular chemical composition for purpose of disinfection, medication and the like, with the opposed ends of the cartridge being closed by circular disc members each having a multiplicity of small diameter openings extending therethrough in a manner to perforate the discs such that water may enter the inner chamber, flow through the cartridge to dissolve and mix with the chemicals therein, with the combined solution of water and chemicals then leaving the cartridge and being dispensed through the applicator nozzle into the vagina area in a manner to flush and treat the same.

3,847,151

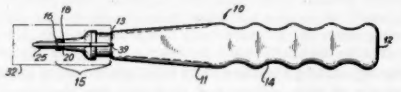
LIQUID DISPENSING DEVICE

Alfred C. D'Alessandro, Marblehead, Mass., and Edwin A. May, Ridgewood, N.J., assignors to International Paper Company, New York, N.Y.

Filed June 4, 1973, Ser. No. 366,469

Int. Cl. A61m *35/00*

U.S. Cl. 128—269 **11 Claims**



1. A liquid dispensing device which comprises:

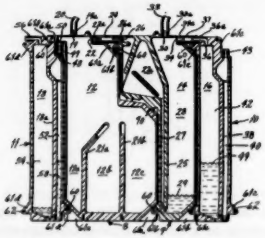
a. a hollow handle having a sealed proximal end and a distal end and containing a liquid;

b. a nozzle mounted on the distal end of said handle and in fluid communication with the interior of said handle, the distal end of said nozzle being sealed, said nozzle including a stress raiser adjacent the sealed end thereof, said stress raiser being defined by a stress concentrating discontinuity in the cross section of said nozzle;

c. a web secured to said device and extending distally from the point of securement, said web having a substantial planar area for bearing against the interior surface of a sponge mounted thereon;

d. a sponge disposed upon and substantially surrounding said nozzle and said web; and
e. means for maintaining said sponge on said web.

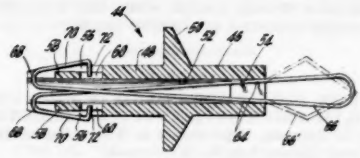
3,847,152
MODULAR THORACIC DRAINAGE DEVICE
Eli Schachet, St. Louis, Mo., assignor to Sherwood Medical Industries, Inc., St. Louis, Mo.
Filed Aug. 6, 1973, Ser. No. 386,130
Int. Cl. A61m *1/04*
U.S. Cl. 128—276 **6 Claims**



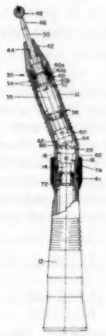
1. A thoracic drainage apparatus comprising first and second hollow plastic members each having an internal chamber, each of said members having integral connector means connecting the chambers of said members in fluid communication with each other, the chamber of said first member having an inlet adapted to be connected in fluid communication with a cavity of a patient for receiving drainage fluid from the cavity, the chamber of said second member being partitioned by an integral wall into first and second channels interconnected at the lower ends thereof for receiving a liquid, a gas outlet, means for connecting a source of negative pressure to said gas outlet, said first channel being connected in fluid communication with the chamber of said first member and said second channel being connected in fluid communication with said gas outlet whereby gas from the cavity can pass through the liquid to the outlet, a third hollow plastic member defining a pressure regulating manometer chamber with an integral wall dividing it into first and second channels interconnected at the lower ends thereof for receiving a liquid, integral connector means on said third member for connecting said first manometer channel in fluid communication with said second channel of second member, said second manometer channel being open to atmosphere whereby said third member is adapted to limit the pressure at the gas outlet, a fourth hollow plastic member having a chamber divided by an integral wall into first and second channels interconnected at the lower ends thereof and adapted to receive a liquid, said first channel of said fourth member having integral connector means for connection with said chamber of said first member, said second channel of said fourth member being connected to atmosphere, and means for locking said members together to prevent separation thereof.

3,847,153
DISPOSABLE PROBE TIP FOR ELECTRO-SURGICAL DEVICE
Bernard Weissman, 225 E. 48th St., New York, N.Y. 10017
Filed Sept. 14, 1973, Ser. No. 397,377
Int. Cl. A61b *17/36;* **A61n** *3/00;* **H05b** *3/40*
U.S. Cl. 128—303.14 **15 Claims**

1. In a hand-held electro-surgical unit having a tubular housing, a nose piece configurated to be mounted on the tubular housing, and a conductive sleeve extending through the nose piece, the improvement comprising a disposable probe tip interchangeably received in the nose piece within the conductive sleeve, said probe tip being formed of an elongate tubular member having a central bore; and a probe tip wire extending through said bore, a first portion of said wire extending beyond one end of said tubular member to an operative position suitable for contacting the human body for treatment thereof, and a second portion of said wire being anchored to said tubular member and projecting in a transverse direction relative to the latter to engage the conductive sleeve when the probe tip is received in the latter.



3,847,154
SURGICAL DRILL WITH DETACHABLE HAND-PIECE
Harald Nordin, Villeneuve, Switzerland, assignor to Edward Weck & Company, Inc., Long Island City, N.Y.
Filed Sept. 22, 1972, Ser. No. 291,421
Int. Cl. A61b *17/16, 17/32*
U.S. Cl. 128—305 **1 Claim**



1. A surgical drill of the type comprising:
a. a hand-piece housing
b. a compound driven shaft rotatably mounted in said housing having aligned forward and intermediate shaft members, a pinion on said forward shaft member adjacent said intermediate shaft member, a drive gear mounted on said intermediate shaft and member the teeth of which extend outwardly therefrom toward said pinion, said gear and pinion mating in operative driving relation.
c. a cutting element having a shank releasably connectable to said driven shaft
d. means to exchangeably and operatively couple said cutting element and said driven shaft which comprises a slotted shaft front-piece having a central opening therein adapted to receive the shank of said cutting element, and a collet adapted to fit over said shank and said front-piece and threadedly engage with said front-piece so as to releasably hold said shank in said shaft
e. a drive housing including drive means therein having a drive shaft
f. means to detachably connect said hand-piece housing to said drive housing and

g. means to exchangeably and operatively couple said drive and driven shafts which comprises a clutch member attached to said drive shaft, a claw member on rear end of said intermediate shaft member of said compound driven shaft having cooperating arm members extending therefrom toward said clutch member adapted to mate in operative driving relation when said hand-piece is housing connnected to said drive housing.

3,847,155

METHODS FOR THE ELIMINATION OF SCARS USING COPOLYMER FILMS IN PLACE OF SURGICAL SUTURES

Omar A. Bernaola, Departmento de Fisica, Universidad de Oriente, Cumana Edo Sucre, Venezuela

Filed Jan. 26, 1972, Ser. No. 220,887

Int. Cl. A61b *17/00*

U.S. Cl. 128—334 R **10 Claims**

1. A method of promoting healing of the umbilical cord consisting of:

cleaning said umbilical cord,

applying a composition comprising an inert solvent and a synthetic resin copolymer composition to said umbilical cord, said synthetic resin copolymer composition consisting essentially of up to 99 percent by weight vinyl chloride, up to 50 percent by weight vinyl acetate and 0 to 20 percent by weight maleic acid, and

vaporizing said solvent whereby a continuous synthetic resin film selected from the group consisting of interpolymers of vinyl chloride, vinyl acetate and maleic acid, copolymers of vinyl chloride and vinyl acetate, mixtures of polyvinyl chloride and said interpolymers, mixtures of polyvinyl acetate and said interpolymers, mixtures of polyvinyl chloride and said copolymers, and mixtures of polyvinyl acetate and said copolymers, is formed enveloping said umbilical cord and promoting the healing thereof.

3,847,156

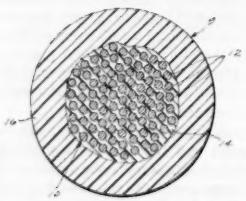
SUTURE

William P. Trumble, Manchester, Mo., assignor to Sherwood Medical Industries Inc., St. Louis, Mo.

Filed July 17, 1972, Ser. No. 272,619

Int. Cl. A61l *17/00*

U.S. Cl. 128—335.5 **13 Claims**



1. A surgical suture comprising a core including a plurality of metallic filaments, an impregnant including a flexible urethane polymer impregnating said core and filling all of the interstices between said filaments for preventing capillary transmission of infectuous fluids along the suture, and an outer flexible plastic coating adhered to said impregnant and having a smooth outer surface.

3,847,157

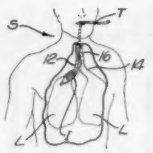
MEDICO-SURGICAL TUBE

James C. Caillouette, 123 Congress St., Pasadena, and Paul E. Johnson, 111 Congress St., San Marino, both of Calif. 91105

Filed June 18, 1973, Ser. No. 370,900

Int. Cl. A61m *25/00*

U.S. Cl. 128—348 **9 Claims**



1. An externally detectable tube structure for use within living tissue, as to establish an access passage comprising:

a seamless elongated tube comprising an integral wall of flexible non-fibrous imperforate material for insertion into living tissue; and

a quantity of ferromagnetic material disposed within said wall along a substantial length of said tube for magnetic detection at an external location in relation to said living tissue, said material being flexible in said tube, to accommodate flexibility of said tube.

3,847,158

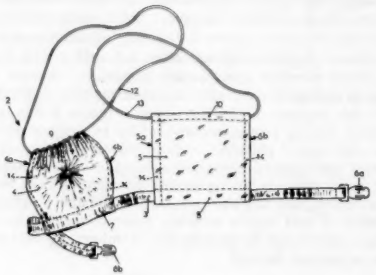
BRASSIERE

Christian Guidoni, Le Plain Horizon, 69 Chemin du Bois Crefieux la Pape, France

Filed May 8, 1973, Ser. No. 358,439

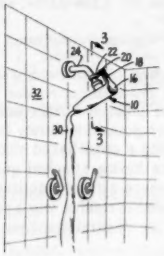
Int. Cl. A41c *3/00;* **A41d** *7/00*

U.S. Cl. 128—492 **3 Claims**



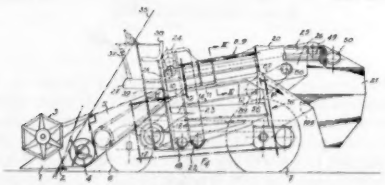
1. A brassiere comprising two rectilinear pieces of fabric, each of said pieces being folded back and secured along two opposite edges to define first and second hems open at each end, a first elongated flexible member extending through said first hem of each piece and adapted to extend about the body of the wearer directly below the breasts, a second elongated flexible member extending through the second hem of one piece and a third elongated flexible member extending through the hem of the other piece, said second and third member being adapted to be secured about the neck of the wearer.

3,847,159
SHOWER HEAD FLOW DIVERTER ATTACHMENT
Tas C. Hofer, 5 Pepper Ln., San Carlos, Calif. 94070
Filed Aug. 6, 1973, Ser. No. 385,869
Int. Cl. B05b *1/26*
U.S. Cl. 239—507 1 Claim



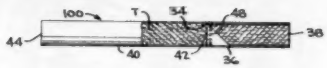
1. A flow diverter device for a shower head comprising an elongated, open-sided deflector and conduit member which is U-shaped in cross-section, which is open along one side for its full length and which has a closed end and an open discharge end, support arm means extending from the closed end of the member past the open side thereof, clamp means attachable to a shower head water supply pipe adjacent a shower head, and a friction hinge connection between said support arm means and said clamp means, said member being thereby adapted to be swung upwardly and away from the shower head to a first or inoperative position and to be swung downwardly and toward the shower head to a first or operative position to at least partially enclose the same and direct the shower head discharge water away from the user and toward the shower compartment wall on which the shower head is located.

3,847,160
CLEANING DEVICE SHIELDING MEANS IN COMBINE HARVESTERS
Frans J. G. C. De Coene, Zedelgem, and Cornelis G. M. Muijs, Sint-Kruis/Brugge, both of Belgium, assignors to Clayson N.V., Zedelgem, Belgium
Filed Oct. 20, 1972, Ser. No. 299,553
Claims priority, application Great Britain, Oct. 25, 1971, 49445/71; Feb. 24, 1972, 8578/72; Oct. 11, 1972, 46854/72; Oct. 11, 1972, 46855/72
Int. Cl. A01f *12/20*
U.S. Cl. 130—27 T 3 Claims



1. In an axial flow combine having a main frame adapted to travel across a field, means for conveying crop material to the frame, means mounted on the frame for threshing and separating said crop material conveyed to said frame, the threshing and separating means extending longitudinally on said frame, means for cleaning said threshed and separated material mounted below said threshing and separating means, wherein the improvement comprises: a protective screen associated with the cleaning means and mounted adjacent and directly below said threshing and separating means to collect and convey said threshed and separated material to the cleaning means and wherein the protective screen is also operative to deflect and direct the draughts of air generated by said threshing and separating means in a forward direction to blow impurities contained in said material in a forward direction.

3,847,161
FILTERED CIGARETTES
David Morgenstern, 38 Beeri St., Tel-Aviv, Israel
Continuation-in-part of Ser. No. 267,975, June 30, 1972, Pat. No. 3,756,250. This application Apr. 20, 1973, Ser. No. 353,105
Int. Cl. A24d *01/04*
U.S. Cl. 131—10.3 8 Claims



1. A filtered cigarette comprising:
a. a tobacco section of cylindrical configuration having an upstream end and a downstream end;
b. a tobacco smoke filter having an upstream forward end and a cylindrical mouthpiece rear end; and
c. a wrapper encircling said tobacco section and said filter and having means providing at least one aperture therethrough;
said upstream end of said filter being disposed along a single plane inclined with respect to the longitudinal axis of the cigarette,
the forwardmost portion of said inclined plane being adjacent the downstream end of said tobacco smoke section and rearmost portion of said inclined plane being significantly displaced from said forwardmost portion at a point approximately 180° from said forwardmost portion;
said inclined plane making an angle of about 20° to about 70° measured with respect to a plane perpendicular to the longitudinal axis of the cigarette;
said downstream end portion, said inclined plane, and said wrapper forming an air mixing chamber;
said at least one aperture means being substantially in flow communication between said air mixing chamber and the outside atmosphere.

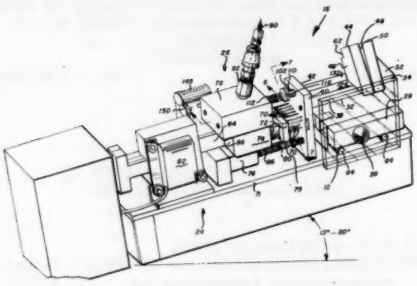
ERRATUM

For Class 131—17 see:
Patent No. 3,847,326

3,847,162
APPARATUS FOR INJECTING A FLUID INTO A PACKAGE OF CIGARETTES
Herbert Seil, Westlake, Ohio, assignor to The Liberty Tool & Die Co., Cleveland, Ohio
Filed Oct. 29, 1973, Ser. No. 410,341
Int. Cl. A24c *05/60*
U.S. Cl. 131—133 14 Claims

1. An apparatus for simultaneously injecting a fluid into a plurality of positioned articles comprising means for positioning the plurality of articles in a predetermined position, a fluid supply, penetrating means for simultaneously penetrating each of the plurality of positioned articles and directing the flow of fluid from said fluid supply to the interior of the articles, pump means interconnecting said fluid supply and said

penetrating means for measuring a predetermined amount of fluid and directing said predetermined amount of fluid to said penetrating means, and actuating means providing for relative movement of said penetrating means and said plurality of positioned articles having a first condition in which said penetrating means is spaced apart from said plurality of positioned articles and a second condition in which said penetrating means penetrates each of the plurality of positioned articles and directs said predetermined amount of fluid to an interior



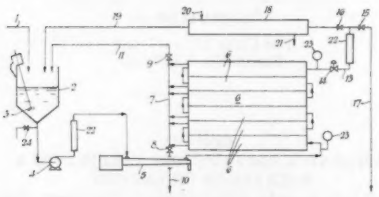
portion of each of the plurality of articles, said pump means measuring a predetermined amount of fluid from said fluid supply and storing said predetermined amount of fluid therein when said fluid actuating means is in said first condition and exhausting the predetermined amount of fluid therefrom and directing said predetermined amount of fluid to said penetrating means when said actuating means is in said second condition.

3,847,163

METHOD OF MAKING A TOBACCO EXTRACT

David J. Molyneux, Southampton, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Feb. 22, 1973, Ser. No. 334,687
Claims priority, application Germany, Mar. 6, 1972, 10311
Int. Cl. A24b *15/08*
U.S. Cl. 131—143 **1 Claim**



1. A method of obtaining a concentrated tobacco extract for use in a smoking article which comprises extracting tobacco with cold water to form a dilute extract, applying the process of reverse osmosis at a pressure within the range of from 39 to 49 kg/cm² to the the dilute, aqueous, extract, at a temperature from the freezing point of the extract to about 35°C., using a membrane of cellulose acetate deposited on a support, which membrane is substantially impermeable to the solute components of the dilute extract.

3,847,164

METHOD OF MAKING RECONSTITUTED TOBACCO HAVING REDUCED NITRATES

Charles F. Mattina, Lenox, and William A. Selke, Stockbridge, both of Mass., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Oct. 11, 1973, Ser. No. 405,383
Int. Cl. A24b *03/14, 15/02*
U.S. Cl. 131—143 **4 Claims**

1. A method of making reconstituted tobacco, comprising the steps of:

a. extracting natural tobacco with water to produce a tobacco extract and a fibrous residue.

b. contacting the tobacco extract with an ion retardation resin to remove potassium nitrate from the extract, said resin comprising a cross-linked styrene-divinylbenezene polymer lattice having attached quaternary ammonium groups, interwoven with polymerized acrylic acid,

c. forming the fibrous residue into a paper-like sheet, and

d. recombining the denitrated extract with the fibrous tobacco sheet.

3,847,165

ACIDIC PERMANENT WAVING SOLUTION AND PROCESS FOR ITS USE

Kanu I. Patel, Chatsworth, and Carroll R. Reiss, Los Angeles, both of Calif., assignors to Redken Laboratories, Inc., Van Nuys, Calif.

Filed Aug. 15, 1973, Ser. No. 388,385
Int. Cl. A45d *7/00*
U.S. Cl. 132—7 **25 Claims**

1. A two stage acidic composition for use in waving operations which comprises:

a. a first stage comprising a urea compound selected from the group consisting of urea, methyl urea, ethyl urea and mixtures thereof;

b. a second stage comprising water, a water soluble thiol and a water soluble protein;

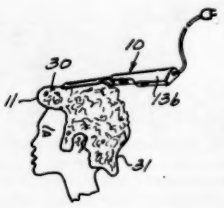
the addition of said first stage to said second stage alone or by the addition of water forming a net solution having a pH between about 6.0 and about 6.8, said net solution having a urea compound concentration of from about 1 to about 4 molar; a water soluble thiol concentration of from about 0.8 to about 1.4 molar and a water soluble protein content of from about 2 to 5 percent by weight based on the total weight of the net solution.

3,847,166

HAIR SHAPER

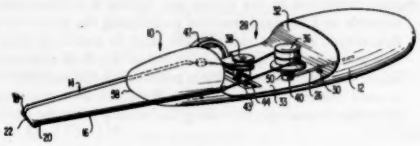
Uriah H. Carr, 8852 S. Michigan Ave., Chicago, Ill. 60619

Filed Aug. 2, 1973, Ser. No. 385,159
Int. Cl. A45d *1/00*
U.S. Cl. 132—9 **10 Claims**



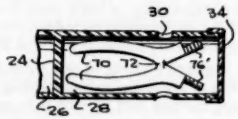
1. A hair styling instrument comprising a hair shaping board, said board having opposed hair contacting and shaping convex and concave surfaces, means intermediate said surfaces for heating both of said surfaces, a handle for said board, said handle being unheated.

3,847,167
FLOSSOMATIC
James J. Brien, Box 348, Napoleonville, La. 70390
Filed June 25, 1973, Ser. No. 373,176
Int. Cl. A61c 15/00
U.S. Cl. 132—92 R 15 Claims



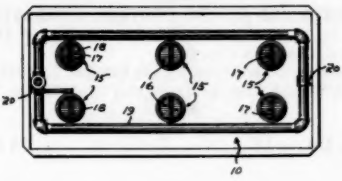
1. A dental floss applicator for cleaning the area between adjacent teeth comprising:
an elongated, hollow handle;
first and second spaced, channel-shaped guide arms mounted on said handle and projecting longitudinally therefrom, the distal portion of said arms adapted to be received in the mouth astraddle the teeth on either side of the area to be cleaned;
releasable means carried by said applicator for retaining a ring of dental floss therein with a segment thereof contained within said handle and another segment extending along the guide arm channel and across the distal end portions of said arms, said releasable means including tension means mounted in said handle for selectively engaging a portion of a dental floss ring when said ring is retained in said handle to develop a predetermined amount of tension thereon;
power drive means mounted in said handle and adapted to be coupled to a segment of a dental floss ring retained therein for imparting reciprocal motion to said dental floss so that when a ring of dental floss is retained in said applicator and said drive means is energized a segment thereof between the ends of said guide arms will be reciprocated relative thereto.

3,847,168
TOOTH CLEANING APPLIANCE
Ulrich R. Schlegel, Bellevue Farms, Rte. 1, Towson, Md. 22186
Filed Aug. 8, 1973, Ser. No. 386,529
Int. Cl. A61c 15/00
U.S. Cl. 132—92 R 10 Claims



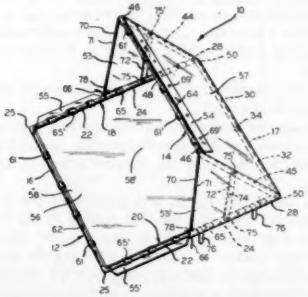
1. A manually held device for enabling the removal of food particles from the teeth of a user, said device comprising an elongated handle member, a dental floss storage compartment in the interior of said handle member for storing a supply of dental floss, a supply of dental floss in said dental floss storage compartment, a Y-shaped dental floss supporting and tensioning means including first and second spreader arms flaring outwardly from a support stem portion, an implement storage chamber in the interior of said handle member for storing said Y-shaped dental floss supporting and tensioning means, connecting means for removably attaching said support stem to one end of said handle member, a dental floss tensioning pin including a dental floss holding portion engageable with dental floss extending from said Y-shaped means, pin support means in said handle member supporting said dental floss tensioning pin for axial movement between an extended position in which said dental floss holding portion is exposed externally of said handle so that the portions of a length of dental floss extending from said dental floss storage compartment across said spreader arms can be engaged with said dental floss holding portion and an inward floss tensioning position in which the dental floss holding portion is positioned inwardly of said handle so that dental floss engaging said holding portion when said pin is in its extended position is tensioned by movement of said pin to its inward position.

3,847,169
SHRIMP WASHERS
Ralph E. Colson, St. George, Maine
Filed Feb. 15, 1973, Ser. No. 332,620
Int. Cl. B08b 3/02
U.S. Cl. 134—183 4 Claims



1. A batch washer for shrimp comprising a pan having a series of drainage ports in the bottom thereof, a header supported within said pan and including portions defining a field within which a batch of shrimp is to be deposited on the pan bottom, opposed portions of said header having jet-establishing ports spaced lengthwise thereof that are downwardly and inwardly inclined to provide spray directly on the pan bottom, and baffle means centrally positioned within said field on said pan bottom and operable when the header is in communication with a source of water under pressure, to cooperate with the resulting sprays to create such turbulence that the shrimp are freed of eggs, dirt, and mud as they are swirled about, said baffle means including a baffle member for each drainage port removably seated therein and closing it.

3,847,170
COMBINATION PARTIAL TENT AND FULL TENT DEVICE
Robert V. Anderson, 169 Morton St., Hoffman Estates, Ill. 61550
Filed Sept. 15, 1972, Ser. No. 289,213
Int. Cl. A45f 1/00, 1/12
U.S. Cl. 135—1 R 13 Claims



1. A combination partial tent and full tent device including:
a lower frame having a forward end and a rear end;

means for extending and retracting said rear end to provide respectively an extended-position when the combination is used as a partial tent and a retracted-position when the combination is used as a full tent;

an upper frame having an operative-position inclined upward from the forward end of the lower frame and extending inward toward said rear end, and a storage-position in juxtaposition with said lower frame, said upper frame being in said operative-position when the device is used as said partial tent or said full tent; and

a covering including a first section and a second section, said first section extending across said lower frame and said second section extending across said upper frame when the device is used as a partial tent, the position of at least part of said covering being varied when the device is converted from a partial tent to a full tent.

3,847,171

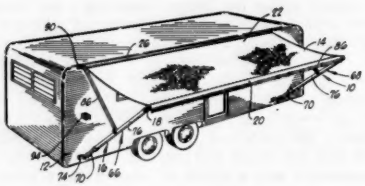
MOTORIZED AWNING CONTROL APPARATUS

Robert M. Akers, and Harold L. Westfall, both of 1536 S. Central, Oklahoma City, Okla.

Continuation-in-part of Ser. No. 108,880, Jan. 22, 1971, Pat. No. 3,779,302. This application May 29, 1973, Ser. No. 364,753

Int. Cl. E04f *10/00*

U.S. Cl. 135—5 AT **9 Claims**



1. Awning control apparatus for connection to a support structure, comprising:

a shaft, having opposite ends and an opening extending a distance axially therethrough intersecting one of the ends thereof;

an awning, having a roll end and a support end, the roll end of the awning connected to the shaft and the support end of the awning connectable to the support structure;

a motor, having a drive shaft extending therefrom, disposed within a portion of the opening in the shaft and the drive shaft extending a distance beyond the end of the shaft intersected via the shaft opening, the motor having a first driven position applying torque to the drive shaft in a direction tending to rotate the shaft in one direction and a second driven position applying torque to the drive shaft in a direction tending to rotate the drive shaft in an opposite direction with respect to the first driven position;

means connected to the shaft and the motor securing the motor to the shaft;

a first support connector having one end portion pivotally connectable to the support structure, generally below the connection between the support structure and the awning;

means connected to the end portion of the first support connector, opposite the end portion of the first support connector connectable to the support structure, and having a portion securedly connecting the drive shaft of the motor to the first support connector, thereby securing the drive shaft in a stationary position relative to the first support connector;

a second support connector having one end portion pivotally connectable to the support structure, generally below the connection between the support structure and the awning;

means having one portion secured to the shaft generally near the end thereof, opposite the end portion of the shaft connected to the motor, and one other portion journally connected to the end of the second support connector, opposite the end portion connectable to the support structure; and

means connected to the motor and having a portion positionable in a forward position positioning the motor in a first driven position rotating the shaft in a storing direction storingly rolling the awning about the shaft and positionable in a reverse position positioning the motor in a second driven position rotating the shaft in a releasing direction releasingly unrolling the awning from the shaft.

3,847,172

FLUID FEED SYSTEMS

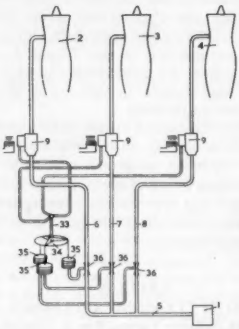
Kenneth Theodore Guy, Ruislip, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 12, 1973, Ser. No. 340,037

Claims priority, application Great Britain, Mar. 10, 1972, 11183/72

Int. Cl. G05d *11/03*; F16k *19/00*

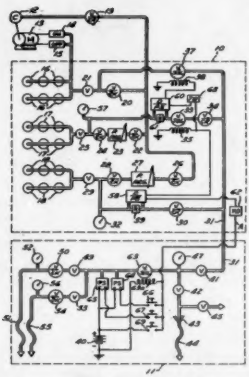
U.S. Cl. 137—100 **16 Claims**



1. A fluid feed system for supplying a fluid consumption unit from at least three fluid pressure sources and comprising in combination, branch conduits for connection to said fluid pressure sources respectively, a main conduit to which said branch conduits are connected at their downstream ends, said main conduit in use, being connected to said fluid consumption unit, flow regulating valves in said branch conduits respectively, each flow regulating valve including a flow control element, a piston forming part of each flow regulating valve and to which can be applied a control pressure variable to determine the setting of the flow control element, each flow regulating valve including pressure regulating means for providing the control pressure of the respective valve, a tiltable plate, pressure responsive devices equal in number to the number of branch conduits, said pressure responsive devices being coupled to said plate at equiangularly spaced positions about a central axis, flow detecting means associated with the branch conduits respectively, each flow detecting means providing a sensing pressure representative of the flow rate through the respective branch conduit, passage means through which the sensing pressures produced by the flow detecting means are applied to the pressure responsive devices respectively whereby if the flow rates through the branch conduits are substantially equal the plate will remain in an untilted position but if one or more of the flow rates should vary the plate will be tilted, and control valves equal in number to the number of branch conduits, each control valve

including a valve element which is operatively connected to the tiltable plate, each control valve acting when operated by tilting of the plate, to modify one of the aforesaid control pressures, the valve elements being operatively connected to plate at positions such that a reduction or increase in the flow of air in one branch conduit effects adjustment of the flow regulating valve in said one branch conduit, thereby to maintain substantially equal flow rates in said branch conduits.

3,847,173
GAS SUPPLY SYSTEM
Robert E. Hill, 325 Hickory Ave., Merritt Island, Fla. 32952
Filed Sept. 13, 1973, Ser. No. 397,067
Int. Cl. F17d *1/02, 3/00*
U.S. Cl. 137—110 **15 Claims**



1. In a gas supply system having a plurality of banks of storage containers which store gas at different pressures and are all connected to a common outlet, means for withdrawing pressurized gas through said outlet first from the bank which is at the lowest pressure, and automatically operable means for withdrawing pressurized gas through said outlet from a second, higher pressure bank of storage containers following its withdrawal from said lowest pressure bank, said automatically operable means comprising a normally closed valve between said higher pressure bank of storage containers and said outlet, and means for opening said valve in response to a pressure drop in said lowest pressure bank to initiate the withdrawal of gas from said higher pressure bank after a time period following the initial withdrawal of gas from said lowest pressure bank,

the improvement wherein said last mentioned means comprises:

means providing a flow restriction between said lowest pressure bank and said outlet;

a differential pressure switch connected across said flow restriction to sense the flow therethrough;

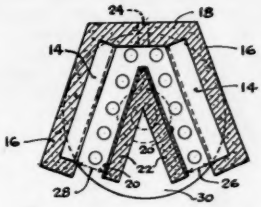
and means responsive to the operation of said differential pressure switch when the flow through said restriction substantially ceases for opening said valve between said higher pressure bank and said outlet.

3,847,174
RADIANT HEAT ABSORBER
Frank B. Doyle, Raymond, Ill. 62560
Filed Feb. 28, 1973, Ser. No. 336,403
Int. Cl. F16k *49/00*
U.S. Cl. 137—334 **9 Claims**

1. A radiant heat absorber apparatus for use in regulating stations associated with transmission of gases, or the like, wherein condensation and freezing of water vapor occurs on devices employed to regulate said gas flow, which freezing impairs the operation or maintenance of said stations, the apparatus comprosing, in combination:

an array of conduits extending from the discharge orifice of the throttling device associated with said regulating station, said conduits having sufficient capacity to handle the maximum design flow of said regulating device, said array of conduits being placed in ordered, spaced apart relation with respect to each other;

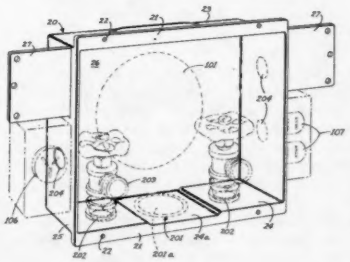
an enclosure extending about said array of conduits, the enclosure having side and top closures and being open at the bottom thereof; and



heating means associated with said enclosure and disposed about said array of conduits to supply heat energy to said conduits, said heating means being arranged in association with the conduits such that all portions of the conduits are exposed to heat energy to elevate the temperature of the conduits in controlled manner to a level above the dew point of the atmosphere in which the apparatus is operating whereby the temperature of the conduits is sufficiently high to avoid accumulation of frozen condensate thereon and wherein the condensate, if

formed, is maintained in liquid condition to drop from the conduits through the open bottom of the enclosure.

3,847,175
UNIVERSAL INSTALLATION BOX FOR USE IN DRYER VENT SYSTEMS AND IN WATER SUPPLY AND DRAIN SYSTEMS
Kenneth J. Anderson, Hebron, Ky., assignor to Carrcraft Manufacturing Company, Cincinnati, Ohio
Filed Feb. 16, 1973, Ser. No. 333,023
Int. Cl. F16l *5/02*
U.S. Cl. 137—360 **10 Claims**



1. A universal box for use selectively with dry-vent and water supply-drain systems; said box having top and bottom walls joined by a pair of side walls and a rear wall, and a

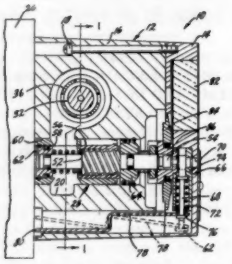
substantially open front; said box including a plurality of knock-outs located in the side, bottom, top and rear walls; a certain, at least, of said knock-outs being removable for the reception in said box of a vent means; and others of said knock-outs being removable for the reception in said box of water supply valve means and drain means; whereby when said box is selected for use in a dryer-vent system only said certain knock-out is removed and whereby when said box is selected for use in a water supply-drain system only said others of said knock-outs are removed; and drain means located in the said bottom wall when the said knock-out for said bottom wall is removed; and including supply valve means located in at least a selected wall when the said knock-out for the said selected wall is removed; said drain means being adapted to receive a hose discharging waste and including a test seal washer, said washer having a top surface and a bottom surface and comprising a blank of relatively stiff material to cover the discharge end of said hose, said blank having a groove in the said top surface and initially extending only part way therethrough and configured to the outer periphery of the discharge end and slightly smaller than said outer periphery, and a plurality of other grooves in the said top surface and extending radially from said first mentioned groove towards but short of the outer periphery of said blank and initially extending only part way through said blank; whereby when all of said grooves are extended clear through said blank, said blank is provided with a central circular opening surrounded by a plurality of gripping segments and said hose may extend through said blank and be gripped by said gripping segments.

3,847,176

TAMPER-PROOF CONTROL VALVE

Ronald L. Loup, Clarkston, Mich., assignor to Double A. Products Co., Manchester, Mich.

Filed Sept. 25, 1972, Ser. No. 291,913
Int. Cl. F16k *35/00*
U.S. Cl. 137—382 **16 Claims**



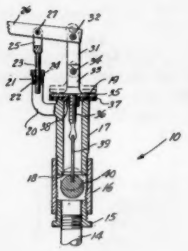
1. A valve adapted to be mounted on hydraulic apparatus for controlling selected characteristics of the hydraulic fluid in said apparatus, comprising a valve body adapted to be mounted on said apparatus, a passageway in said body having an inlet port and an outlet port arranged so that said passageway is in the hydraulic circuit of said apparatus, adjustment means in said passageway for regulating a selected characteristic of the hydraulic fluid in said passageway, said adjustment means being adjustable by a tool inserted into the valve body from a position outside said valve body, and tamper control means in said valve body having a first position preventing insertion of said tool to said adjustment means and a second position wherein said tool can be inserted into position to actuate said adjustment means, said tamper control means being located in said valve body so that access to it for moving it to its second position can be gained only by removal of at least a portion of said valve body from said apparatus.

3,847,177

SAFETY FLOAT VALVE

Lorin Lee Morrow, Box 2033, Bayard, N. Mex. 88061

Filed May 18, 1973, Ser. No. 361,564
Int. Cl. F16k *31/24*
U.S. Cl. 137—400 **5 Claims**



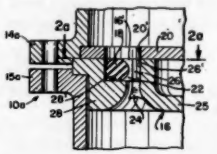
1. A safety float valve for maintaining a desired water level in a trough or tank comprising a water conduit extending to the trough or tank, a coupling secured to said conduit within said trough or tank, a pipe nipple secured to the upper end of said coupling and said nipple having a valve seat formed on each end thereof, a lever arm adjustably mounted on said pipe nipple for pivotal movement about a horizontal pivot, a float connected to the outer end of said lever arm, a pair of valves connected to the inner end of said lever arm and positioned for cooperation with the seats at opposite ends of said nipple, said valves being spaced apart a distance greater than the distance between the seats on said valve nipple to permit said valves to engage with their respective seats with the other of said valves disengaged from its seat.

3,847,178

FLUID FLOW REGULATORS

Wolf-Dieter Keppel, Remscheid, Germany, assignor to Mannesmann & Keppel Electronics, Remscheid, Germany

Filed Dec. 8, 1971, Ser. No. 205,842
Claims priority, application Germany, Dec. 10, 1970, 2060751; June 23, 1971, 2131117
Int. Cl. F16k *15/08, 15/14*
U.S. Cl. 137—515.7 **9 Claims**



1. A fluid flow regulator adapted for operative intercalation in a conduit through which flows a medium to be regulated, comprising, in combination: a housing including interengaging inner and outer housing members; said inner member being in the form of a substantially axial core portion; a plurality of intermittent larger and smaller protuberances on said core portion; an elastically deformable sealing member, having a substantially circular cross-section, surrounding said protuberances and constituting flow throttling means in cooperation with said protuberances and also with a seating surface provided on said outer housing member; said sealing member being variably inwardly pressed against said protuberances during the flow of the medium; said core portion having inter-

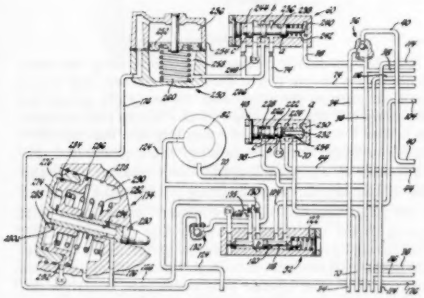
mittent fluid flow passages between said protuberances and said sealing member; and means for changing the cross-section of said passages and the contact areas in the direction of flow of the medium between said sealing member, on the one hand, and said protuberances and said seating surface, on the other hand, depending on increasing and decreasing differential-pressure values of the medium flow through the regulator, whereby substantially linear contact is made by the outside of said sealing member with said seating surface in the outer housing member, while substantially punctiform contact results by the inside of said sealing member where the latter faces said larger protuberances of the of the inner housing member, but practically no contact by said inside of the sealing member where it faces said smaller protuberances in the absence of the medium flow.

3,847,179

TRANSMISSION CONTROL WITH PRESSURE BOOST SYSTEM

Carl E. Shellman, Livonia, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Sept. 12, 1973, Ser. No. 396,555
Int. Cl. F16k *11/10*
U.S. Cl. 137—596 **3 Claims**



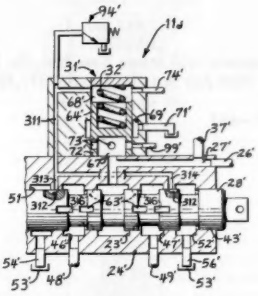
1. A hydraulic transmission control for an engine driven transmission having a plurality of drive conditions including automatic forward drive, manual low and intermediate forward drives, and a reverse drive, said control comprising: a source of fluid pressure; regulator valve means for regulating the pressure level in said control including a single diameter valve bore, a valve spool having spaced equal diameter lands slidably disposed in said valve bore, spring bias means for establishing a minimum pressure level in said control, and single area boost chamber means formed by said spool and bore for receiving a bias pressure for assisting said spring bias means to increase the pressure level in said control; boost passage means for delivering the bias pressure to said single area boost chamber means; manual valve means in fluid communication with said source and being selectively movable for establishing said drive conditions; throttle valve means in fluid communication with said manual valve means for establishing a throttle bias pressure in said control system proportional to engine throttle operation when said manual valve means is positioned for automatic forward drive and reverse drive; reverse boost valve means in fluid communication with said manual valve means and said throttle valve means for establishing a variable reverse bias pressure in said control system when said manual valve means is positioned for reverse drive operation; intermediate boost valve means in fluid communication with said manual valve means for establishing a constant bias pressure in said control system when said manual valve means is positioned for the intermediate or low forward drive operation; and bias pressure passage and valve means in fluid communication with said throttle valve means, said reverse boost valve means, said intermediate boost valve means and said boost passage means for selectively communicating throttle bias pressure, the reverse bias pressure and the constant bias pressure to said single area boost chamber means to change the pressure level in said control when said manual valve means is positioned for automatic forward drive, reverse drive and manual intermediate or low drive respectively.

3,847,180

LOW EFFORT, PROPORTIONAL CONTROL VALVE

Neil W. Kroth; Kenneth R. Lohbauer, and James E. Scheidt, all of Joliet, Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 23, 1971, Ser. No. 211,333
Int. Cl. F16k *11/00*
U.S. Cl. 137—596.13 **2 Claims**



1. A fluid control circuit for regulating operation of a double-acting hydraulic motor and including a source of fluid under pressure and a control valve body defining a bore, an inlet chamber being in communication with the bore and the source, service chambers being respectively in communication with the control valve bore in axially spaced apart relation on opposite sides of the inlet chamber, drain means also being in communication with the control valve bore in axially spaced apart relation from each service chamber and a spool reciprocably arranged in the control valve bore and having a neutral position wherein the spool blocks the inlet chamber from communication with both service chambers, the spool being movable in opposite directions from its neutral position for respectively communicating the service chambers with the inlet chamber and drain means, metering means being movable with the control valve spool to provide a variable opening between the inlet chamber and the respective service chambers as the spool is moved from its neutral position toward its respective positions providing substantially free communication with the respective service chambers, and comprising

a dump valve forming a bore having one end in free communication with the inlet chamber, a dump spool being movable arranged in the dump valve bore for separating its one end from its other end, the dump valve bore having an opening in communication with drain, the dump spool being movable toward the one end of the dump valve bore to block the inlet chamber from the drain opening and toward the other end of the dump valve bore to communicate the inlet chamber with the drain opening, spring means urging the dump spool toward the one end of the dump valve bore, the spring means being selected to establish a differential pressure between the inlet chamber and each of the respective service chambers when they are communicated by the metering means and to establish the only substantial force tending to urge

the dump spool toward the one end of the dump valve bore and limit communication between the inlet chamber and drain opening when the control valve spool is in its neutral position,

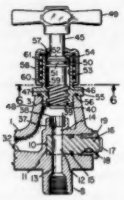
means forming passages in said control valve body comprising a branched passage communicating the other end of the dump valve bore with the control valve bore at a location intermediate each service chamber and the adjacent, axially spaced apart drain means, and

regulating means being movable with the control valve spool and in regulating communication with the passages to communicate the other end of the dump valve bore with the respective service chambers when they are placed in communication with the inlet chamber by the control valve spool and to communicate the other end of the dump valve bore with drain when the control valve spool is in its neutral position, the regulating means comprising axially elongated peripheral slots formed in the control valve spool for selectively communicating the branched passages with the respective service chambers and drain chambers.

3,847,181
FAUCET

Albert T. Scheiwer, 628 Brown Ave., Erie, Pa. 16502

Filed July 9, 1973, Ser. No. 377,386
Int. Cl. E03c *1/00*
U.S. Cl. 137—613 **7 Claims**

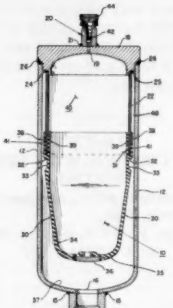


1. A faucet comprising a hollow body having an inlet and an outlet, an opening within the body through which fluid flows from the inlet to the outlet, a plunger coaxial with the opening and movable axially into and out of said body, having one end within the body for closing and opening said opening by axial movement of the plunger toward and away from said opening, said plunger having the other end extending outside the body, a sleeve projecting from the body having a bore coaxial with the plunger with its inner end open to the inside of the body and its outer end open to the outside of the body, sealing means projecting outwardly from the plunger and slidably engaging said bore for closing said outer end of the sleeve, a bonnet having a top wall extending over said outer end of the sleeve and rotatable and slidable on the plunger and limiting movement of the plunger relative to the bonnet in a direction away from said opening, said bonnet having side walls depending around said sleeve, angularly spaced projections on said sleeve and on the side walls of said bonnet, the projections on the bonnet received in the space between the projections on the sleeve, cam surfaces on said projections interengaging by relative rotation of said bonnet and sleeve for camming the bonnet toward said body and for releasably fastening the bonnet to said body, the top wall of said bonnet limiting the movement of the plunger away from said opening when the bonnet is fastened to the said body so that mere release of the fastening of the bonnet to said body allows said plunger to be moved out of said body, and spring means between said bonnet and sleeve for biasing said bonnet out of the body and holding said surfaces in engagement.

3,847,182
HYDRO-PNEUMATIC FLEXIBLE BLADDER ACCUMULATOR

Edward M. Greer, 820 Loma Vista Dr., Beverly Hills, Calif. 90210

Filed June 18, 1973, Ser. No. 371,068
Int. Cl. F16l *55/04*
U.S. Cl. 138—30 **9 Claims**



1. A hydro-pneumatic accumulator comprising: an elongated container having a first fluid port on one end and a second fluid port on the other end; an integrally connected tubular elongated member closed by an end cap and mounted at one end of the container and extending into the container and having a length such that its inner end is positioned substantially midway along the length of the container, the outer surface of said tubular member being spaced radially inward from the inner surface of said container providing a heat dissipating space therebetween and aiding in limiting heat transfer during fabrication of the accumulator; and a thimble-shaped bladder of resilient, deformable material mounted on the inner end of said tubular member in said container between the first port and the second port, said bladder having a thickened open mouth end portion, said open mouth end portion having a grooved portion in the bladder, said inner end of said tubular member being secured in said grooved portion of the bladder, with the end portion of the bladder extending over and surrounding the inner end of said tubular member, said thickened open mouth end portion forming a relatively thick outer peripheral band section adjacent the thickened mouth end portion, and an outer peripheral groove between the outer peripheral band section and the thickened open mouth end portion and forming a relatively thin walled peripheral band section therebetween, thereby to cause the bladder to expand to the inner surface of the container in the presence of increased gas pressure through the first fluid port, and to collapse and bend inwardly in the presence of increasing liquid pressure through the second fluid port around the inner end of said tubular elongated member and turn itself inside-out as the liquid pressure increases.

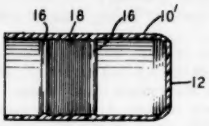
3,847,183
CLOSURE

Vincent Edwin Meyer, 114 W. Maiden Ln., Monroe, Conn. 06468

Filed Nov. 22, 1972, Ser. No. 308,660
Int. Cl. B65d *59/06*
U.S. Cl. 138—96 R **7 Claims**

1. A closure formed of a polymeric composition exhibiting plastic memory comprising a substantially tubular member having at least one open end and the interior wall provided with a network of protuberances formed integrally with the closure and of the same polymeric composition and being

substantially normal to the longitudinal axis of the closure, said closure including said protuberances characterized by



being capable of changing dimensions between a heat stable condition and a heat unstable condition.

3,847,184

METAL PIPE WITH SPACED FLEXIBLE PORTIONS

Andrew God, P.O. Box 661, Arlington, Va. 22216

Filed Oct. 5, 1972, Ser. No. 295,215

Int. Cl. F16l *11/16*

U.S. Cl. 138—120 **2 Claims**

1. An integral unitary pipe for the conveyance of a fluid, particularly along a non-linear path, said pipe being of metal and comprising longitudinally alternating cylindrical and flexible portions, each said flexible portion comprising a plurality of corrugations throughout its length whereby the pipe can be shaped at its flexible portions into a non-linear configuration, said cylindrical portions and flexible portions being of substantially the same length, said corrugations each having a 30° pitch with respect to the vertical axis through the apex of the corrugations and extending outwardly of the outer surfaces of the cylindrical portions therebetween such that the flexible portions can be bent at 90° angles with a small radius, one end of said pipe being formed with an enlarged diameter coupling portion, and at least one flexible portion near the end of the pipe and comprising both helical and straight configurations.

3,847,185

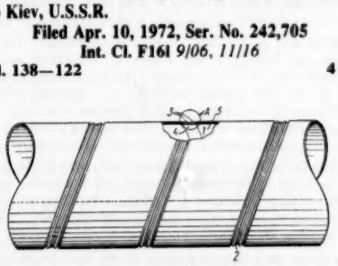
PIPELINE FOR USE UNDER CONDITIONS OF CONSIDERABLE VARIATIONS IN TEMPERATURE

Georgy Vladimirovich Raevsky, Kiev pereulok Mechnikova, 3, kv. 6 Kiev, U.S.S.R.

Filed Apr. 10, 1972, Ser. No. 242,705

Int. Cl. F16l *9/06, 11/16*

U.S. Cl. 138—122 **4 Claims**



1. A pipeline for use under conditions of substantial variations in temperature, said pipeline comprising a coiled roll blank having lateral edges joined by a weld joint disposed on a helical line along the pipeline, and means for compensating for thermal strains in said pipeline including at least one pair of corrugations formed in the wall of said pipeline along said helical line, one corrugation of said one pair being on each side of said helical line, said weld joint being equidistantly located between said corrugations of said one pair, said corrugations being disposed in a limited transverse region adjacent the lateral edges of the roll blank to form in succession a corrugation section of relatively small axial length and a smooth section of relatively great axial length along said pipeline.

3,847,186

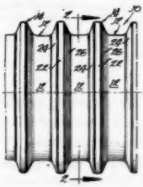
CORRUGATED CONDUIT

William J. Bauer, 422 S. Park, La Grange, Ill. 60525

Division of Ser. No. 784,355, Dec. 17, 1968, Pat. No. 3,731,711. This application Oct. 12, 1972, Ser. No. 297,007

Int. Cl. F16l *9/06*

U.S. Cl. 138—173 **10 Claims**



1. Conduit having a corrugated inner surface defining inwardly projecting lands with broad inner crest surfaces each shallowly inclined radially outward at each longitudinal edge thereof, and intervening grooves joining adjacent crests, each of said grooves being defined by side walls and a bottom section, said inner crest surfaces being of substantially greater width than said bottom sections, and said conduit including vortex generating means on said crests comprising inwardly projecting members each having a cross section which is asymmetrical relative to the direction of flow of fluid through said conduit, said inwardly projecting members being disposed at radial and longitudinal spacings providing vortices over substantially the entire inner surface of said conduit during flow of fluid through said conduit.

3,847,187

WEFT INSERTING CHANNEL FOR PNEUMATIC WEAVING MACHINES

Vojtech Buran; Vladimir Horn, both of Brno, and Borivoj Suchanek, Luhacovice, all of Czechoslovakia, assignors to Vyzkummy a vyvojovy ustav Zavodu vseobecneho strojirenstvi, Brno, Czechoslovakia

Filed July 26, 1972, Ser. No. 275,328

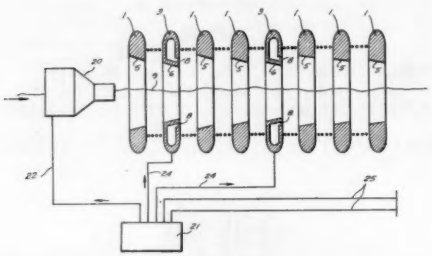
Claims priority, application Czechoslovakia, July 27, 1971, 5472-71

Int. Cl. D03d *47/30*

U.S. Cl. 139—127 P **4 Claims**

1. In a pneumatic weaving machine forming successive sheds, a weft inserting channel for pneumatically inserting weft into the successive sheds, said channel including aligned active and passive sections, said active sections having weft inserting openings of substantially circular cross-section, said active sections each having a directing profile forming at least a part of its weft inserting opening, each of said active sections having a front wall facing in the direction of weft inserting and having discharge openings arranged around said weft inserting opening therein, each of said passive sections having a weft inserting opening of substantially circular cross-section, the weft inserting openings of all of the active and passive sections

lying on a common axis, which is also the axis of the channel, said passive sections being arranged between successive active sections, said passive sections having a directing profile arranged in said weft inserting openings thereof, a pressure air jet weft-inserting nozzle arranged at the rear end of the channel and directing a jet of air in the forward, weft inserting direction, a source of pressure air coupled with said pressure air jet weft-inserting nozzle, a source of additional pressure air coupled with said discharge openings of said active sections,



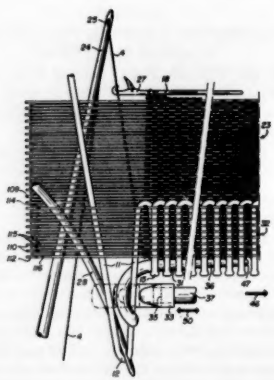
the radial distance of the directing profile from the common axis of at least one passive section adjacent an active section in the direction of web insertion being no less than the radial distance of imaginary lines connecting tangential points of the directing profile of the following active section with the points of intersection on said front wall of the preceding active section, and the radial distance of said points of intersection from the common axis of the channel being longer than the radial distance of said discharge openings of said active sections.

3,847,188

WOVEN TAPE PROVIDED WITH A LIST HAVING PROTRUDING LOOPS

Ulrich Auer, Chene-Bougeries, Geneva, and Andre Nicole, Puplinge, Geneva, Switzerland, assignors to Interbrew S. A., Luxembourg, Luxembourg

Division of Ser. No. 74,744, Sept. 23, 1970, Pat. No. 3,692,068. This application July 17, 1972, Ser. No. 272,572
Claims priority, application Italy, Oct. 9, 1969, 23132/69; Switzerland, Mar. 25, 1970, 4487/70
Int. Cl. D03d 1/00
U.S. Cl. 139—384 B **2 Claims**



1. A tape comprising a tape body and a list connected with said tape body, and a flattened spiral list thread received in said list and having turns forming loops projecting from an outer edge of the list, said turns having upper and lower shanks, said tape body having a fabric structure of single thickness formed by interwoven double-pick weft threads and warp threads, said list having a fabric structure of double thickness comprising:

a lower strata of warp threads interwoven with said doublepick weft threads and extending below an outer portion of the lower shank of said turns;

an upper strata of warp threads extending above an outer portion of the upper shanks of said turns over the width of the list;

portions of said double-pick weft threads extending from said lower strata between said turns at said outer edge up to said upper strata of warp threads, thence over the warp threads of said upper strata and back to the lower strata at an inner edge of said list; and

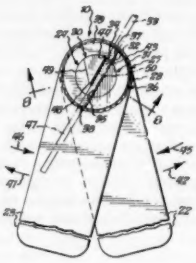
portions of the warp threads of said lower strata rising between each lower shank of one turn and the upper shank of a consecutive turn over the portions of said double-pick weft threads overlying said upper strata and back between said shanks to the plane of the lower strata.

3,847,189

WIRE CUTTING AND BENDING TOOL

Jan J. Guzda, 125 Glenhaven, Amherst, N.Y. 14120

Filed Mar. 20, 1973, Ser. No. 343,001
Int. Cl. B21f 1/00
U.S. Cl. 140—106 **16 Claims**

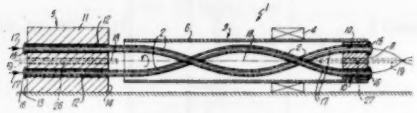


1. A bending tool for wire or the like comprising first and second handles, a boss secured to said first handle and having a first convex cylindrical surface, a shell secured to said second handle and journalled for pivotal movement relative to said boss and having a first concave cylindrical surface in engagement with said first convex cylindrical surface, first and second spaced die means on said boss defining a channel therebetween for receiving the first portion of a wire therein, said second die means including a side having a second convex cylindrical surface which is a continuation of said first convex cylindrical surface, a ledge on said shell, said ledge having a second concave cylindrical surface which is a continuation of said first concave cylindrical surface, a bending end on said ledge located so as to move across said channel to engage a second portion of said wire extending beyond said channel to thereby cause said second portion to be bent relative to said first portion by being moved around said first die means, said second concave cylindrical surface of said ledge also being in engagement with said second convex cylindrical surface of said side of said second die means which is opposite to the side thereof which forms a side of said channel, whereby said second die means and said ledge stabilize each other.

3,847,190
METHOD AND APPARATUS FOR TWISTING WIRES

Glen Robert Forester, Burnaby, British Columbia, Canada, assignor to Phillips Cable Limited, West Brockville, Ontario, Canada

Filed Dec. 19, 1972, Ser. No. 316,542
Int. Cl. B21f 7/00
U.S. Cl. 140—149 17 Claims

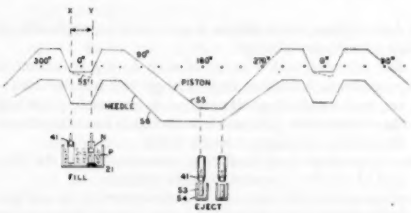


1. An apparatus for the continuous production of an electric cable comprising a set of twisted together electric conductor wires in which each wire defines a helical path about the longitudinal axis of the set which reverses periodically in direction in a predetermined manner, which comprises an entrance housing and spaced apart therefrom an exit housing; a plurality of flexible elongated tubular sleeves continuous from end to end of a low friction material; said apparatus having a longitudinal axis about which said wires are twisted through an angle greater than 360°; said sleeves being entrained from end to end between and supported at their ends by said housings; said entrance housing being rigidly mounted and said exit housing being mounted for oscillatory movement about said longitudinal axis of said apparatus to twistingly rotate the sleeves through an angle greater than 360°; and means for continuously feeding electric conductor wires to and through said tubular sleeves as the sleeves are twistably rotated.

3,847,191
MEANS AND METHODS FOR MEASURING AND DISPENSING EQUAL AMOUNTS OF POWDERED MATERIAL

Theodore F. Aronson, 2108 Sunrise Key Blvd., Fort Lauderdale, Fla. 33304

Continuation of Ser. No. 174,022, Aug. 23, 1971, abandoned. This application Apr. 11, 1973, Ser. No. 350,145
Int. Cl. B65b 1/26
U.S. Cl. 141—12 12 Claims

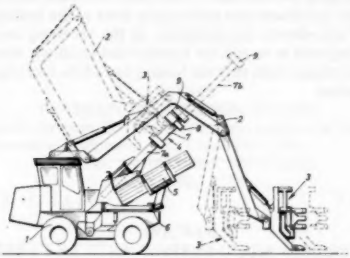


1. Apparatus for measuring and dispensing a predetermined volume of powdered material, comprising a supply container for powdered material, means for applying suction to powdered material in said supply container to compact said powdered material to a predetermined density, means for maintaining the depth of said powdered material in said supply container at a predetermined level, means including an open ended measuring member and for inserting said measuring member into said compacted and leveled powdered material to a predetermined depth to charge said measuring member with a predetermined volume of said compacted material and means for discharging said predetermined volume of said compacted material from said measuring member.

3,847,192
TREE HARVESTING APPARATUS

Karl-Gunnar Jorgensen, Solentuna, Sweden, assignor to Logma Aktiebolag, Soderham, Sweden

Filed May 18, 1973, Ser. No. 361,624
Claims priority, application Sweden, May 23, 1972, 006654; May 23, 1972, 006555
Int. Cl. B27c 9/00
U.S. Cl. 144—34 E 9 Claims

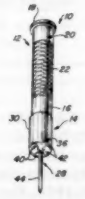


1. A tree harvesting apparatus comprising a vehicle and a felling assembly supported by said vehicle, said felling assembly including a frame, cutting means for severing a standing tree from its root, said cutting means being mounted on the low portion of said frame, two grapple means, each adapted for grasping and holding a tree close to its thicker end, and movably mounted on said frame side by side and mutually spaced above said cutting means with the center axes of said two grapple means parallel to each other and to the center axis of said cutting means, and means for moving said two grapple means relative to said frame in such a manner that alternatively the one or the other grapple means can be moved to a position immediately above and aligned with said cutting means, each of said two grapple means being mounted on said frame of said felling assembly by means of two mutually parallel and equally long pivot links, each of said links having one end pivoted in said frame about pivot axes perpendicular to and substantially intersecting the center axes of said cutting means, the opposite ends of said links being pivoted in the respective grapple means.

3,847,193
NAIL-SCREW HOLDER

Frank H. Brunstetter, San Antonio, Tex., assignor to Hi-Tor Inventions Corporation, San Antonio, Tex.

Filed June 29, 1973, Ser. No. 374,986
Int. Cl. B25c 3/00
U.S. Cl. 145—46 8 Claims



1. A holder for releasably retaining fasteners during driving operations comprising:

a tool engaging portion with leading and trailing ends, and a fastener-head receiving member secured to the leading end of the tool engaging portion, said receiving member including a sleeve in surrounding relation to said tool engaging portion and a flexible membrane across the leading end of said sleeve and spaced from the leading end of the tool engaging portion to define a shallow receptacle therein, said flexible membrane provided with at least one slotted portion forming a self-closing opening therethrough dimensioned for insertion of the head of a fastener into engagement with the leading end of the tool engaging portion, said slotted portion located centrally of said membrane and terminating short of the leading end of said sleeve, the resiliency of the receiving member being such as to grip the fastener and yieldingly maintain it in engagement with the leading end of the tool engaging portion.

3,847,194

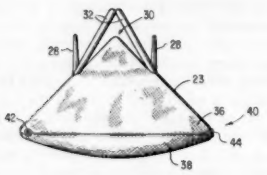
REVERSIBLE MULTI-PURPOSE ARTICLE CARRIER

Rose Corigliano, 123 Brackerridge, San Antonio, Tex. 78209

Filed Jan. 2, 1973, Ser. No. 320,187

Int. Cl. A45c *3/06*

U.S. Cl. 150—28 **8 Claims**



1. An expandable article carrier comprising a generally rectangular panel of flexible material continuous along each of the four sides thereof with material folds defining the bases of four generally triangular panel portions, each of said generally triangular panel portion being of an area equal to substantially one fourth the area of said generally rectangular panel and having an apex remote from said base thereof and legs extending from said apex to said base, said four generally triangular panel portions being infolded along said base defining material folds into overlying relationship to said rectangular panel whereby said legs of adjacent triangular panel portions are contiguous; and attachment means joining portions of said contiguous legs of adjacent triangular panel portions from said base to a point short of said apex.

3,847,195

CHECK WALLET AND BLANK FOR FORMING SAME

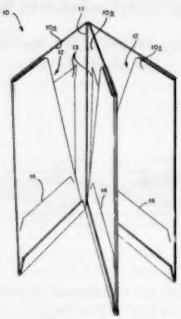
Walter J. Tyrseck, Quaker Hill, Conn., assignor to Robertson Paper Box Co., Inc., Montville, Conn.

Filed June 29, 1973, Ser. No. 375,113

Int. Cl. A45c *1/06*

U.S. Cl. 150—39 **8 Claims**

1. A wallet comprising a plurality of panels foldable together along a common hinge line to form the front and rear pages and at least one intermediate page of a book-like container, the intermediate page being comprised of a pair of



panels secured together back-to-back, and flaps foldably connected to the panels to form a pocket on each of the pages.

3,847,196

AN ICE AND SNOW ANTI-SLIDING DEVICE, APPLICABLE TO WHEELS OF VEHICLES

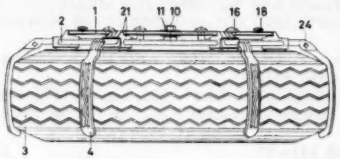
Teodosio Diaz Gomez, Paseo de Perez Galdos 14, Santander, Spain

Filed Dec. 19, 1972, Ser. No. 316,482

Claims priority, application Spain, Dec. 20, 1971, 175543; Sept. 9, 1972, 183742

Int. Cl. B60c *27/04*

U.S. Cl. 152—226 **8 Claims**



1. Anti-skid apparatus for use in snow and ice, applicable to vehicle wheels, comprising:

a disc provided with a series of slots having an eccentric portion which inclines from a larger to a smaller diameter, and a radially prolonged portion extending towards the center of the disc and terminating in an enlargement, the whole comprising a single piece;

an independent peripheral ring, concentric with the disc, and of smaller diameter than the wheel;

a series of radially disposed guides supported on said peripheral ring equal in number to the number of slots in use on said disc;

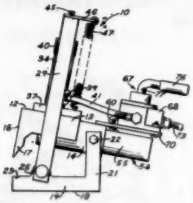
a series of cranked arms, equal in number to the guides, having a straight section and an arched section, the straight section being mounted so that it slides radially in the guides of the ring and having at one end a king pin slidably disposed in said slots, said arched section of the arm being joined at the opposite end of said straight section, in order to be coupled over the tread of the wheel, and constituting the anti-skid element, and both the straight and arched sections, being joined in an articulated manner; and

means for rotating said disc relative to said ring whereby said cranked arms are displaced radially.

ERRATUM

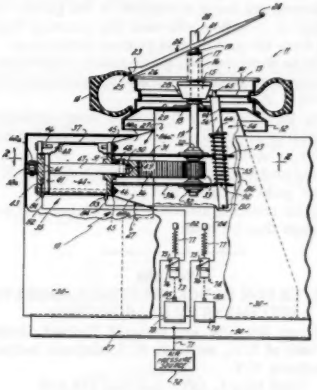
For Class 156—293 see:
Patent No. 3,847,199

3,847,197
TIRE BEAD DEMOUNTING APPARATUS
Ivan P. Konen, Fort Benton, Mont., assignor to Konen, Inc., Fort Benton, Mont.
Filed Apr. 16, 1973, Ser. No. 351,149
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.17 **8 Claims**



1. A tire bead demounting apparatus for use in connection with a tire rim having an angular tire retaining section with an interior tire bead bearing surface and an opposite exterior surface, and a tire installed on said rim having a side wall terminating in a bead situated adjacent and in sealing relationship to said interior surface, said apparatus including:
- a jaw assembly having a first jaw and a second jaw opposed to and movably connected to the first jaw for movement between an open position wherein said first and second jaws are spaced apart from each other, and a closed position wherein said first and second jaws are relatively closer to each other;
- a yoke pivotally connected to the second jaw;
- a first hydraulic motor of the type having a cylinder portion and a piston-rod portion movable inwardly and outwardly relative to the cylinder portion to move said jaws from said open position toward said closed position;
- one portion of said first hydraulic motor being connected to said yoke, the other portion of said first hydraulic motor being connected to the first jaw whereby upon actuation of the first hydraulic motor the piston-rod portion moves outwardly of the cylinder portion to move the jaws toward the closed position;
- said second jaw having a configuration adapted to bear against the exterior surface of the tire retaining section of the tire rim;
- said first jaw having a wedge configuration adapted to be lodged between and relatively displace said bead and said interior surface of the tire retaining section of the tire rim when the second jaw is bearing against the exterior surface and said first power means is actuated to move the jaws toward said closed position;
- plunger means having a plunger head in alignment with the first jaw and movable with the first jaw toward said closed position;
- said plunger head being extendible outward from the first jaw toward the tire side wall when the wedge configuration of the first jaw is lodged between said bead and said interior surface of the tire retaining section of the tire rim; a second hydraulic motor of the type having a cylinder portion and a piston-rod portion movable inwardly and outwardly relative to the cylinder portion, one portion of said second hydraulic motor being connected to the first jaw, the other portion of said second hydraulic motor being connected to the plunger means whereby upon actuation of the second hydraulic motor the piston-rod portion is moved outwardly of the cylinder portion to extend said plunger head outward against said tire side wall when the wedge configuration of the first jaw is lodged between said bead and said interior surface;
- valve means operably connected to the first hydraulic motor and the second hydraulic motor for independent actuation of each hydraulic motor;
- said valve means having control means successively movable between a first position to actuate the first hydraulic motor, a second position to actuate the second hydraulic motor, and a third position to release both the first and second hydraulic motors.

3,847,198
CENTERPOST DRIVE MECHANISM
William G. Brosene, Jr., Cincinnati, Ohio, assignor to Magnum Automotive Equipment, Inc., Cincinnati, Ohio
Filed Jan. 30, 1973, Ser. No. 328,016
Int. Cl. B60c *25/06*
U.S. Cl. 157—1.24 **7 Claims**



1. A modular centerpost drive mechanism for an automatic tire changer machine, said mechanism being adapted to rotate a centerpost for a tire mount/demount tool to aid in mounting a tire onto and demounting a tire from a wheel, said mechanism including
- a rack adapted to drivingly engage a pinion fixed to said centerpost,
- a double acting fluid power unit connected to said rack, said power unit being adapted to drive the rack in a positive manner in both forward and reverse directions so as to positively drive said centerpost in both clockwise and counterclockwise directions under an operating workload,
- at least one dashpot device connected at one end to said rack and at the other end to said power unit, said dashpot device serving to at least partially control the rates of rotation of said centerpost in both the clockwise and counterclockwise directions regardless of the workload provided to said rack by said power unit, and
- fastening means adapted to mount said drive mechanism to said tire changer machine, said fastening means being easily operable to allow removal of said drive mechanism from operative engagement with said machine in modular fashion.

3,847,199
REMOVABLE OVEN DOOR GASKET AND METHOD OF MAKING SAME

Ernie A. Meier, Glen Ellyn, Ill., and Alfred M. Micallef, Ann Arbor, Mich., assignors to K. & M. Rubber co., Elk Grove, Ill.

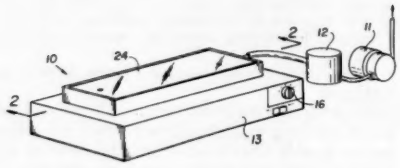
Division of Ser. No. 217,862, Jan. 14, 1973, Pat. No. 3,765,400. This application May 29, 1973, Ser. No. 364,374
Int. Cl. B29c *19/00*
U.S. Cl. 156—293 9 Claims

1. A method of making elastomeric gaskets which are to be used in sealing an oven door to an oven frame, each gasket comprising an elongate elastomeric gasket member having hollow ends and having a metal insert in each hollow end, each insert having a body portion and a securing formation at one end thereof and being assembled in the gasket with the body portion in a hollow end and the securing formation protruding from the gasket, said method comprising:
   a. forming an elongate elastomeric gasket with hollow ends,
   b. forming a metal insert with a body portion and a securing portion at one end thereof,
   c. coating the body portion of each insert excluding the securing formation with a room temperature vulcanizable adhesive in liquid form,
   d. inserting said body portion into the hollow ends of the elongate gasket member and
   e. curing the resulting assembly in moist heat for substantially more than an hour.

3,847,200
APPARATUS FOR CONCENTRATING LABORATORY SPECIMENS BY EVAPORATION

Reiner H. Kopp, Dix Hills, and Heino H. Holland, Huntington Station, both of N.Y., assignors to Brinkmann Instruments, Inc., Westbury, N.Y.

Filed May 1, 1972, Ser. No. 248,820
Int. Cl. B01d *1/14*
U.S. Cl. 159—16 R 3 Claims

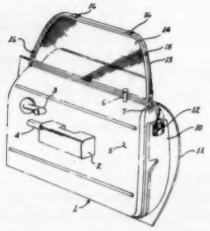


1. Apparatus for concentrating laboratory specimens by evaporation comprising a base receptacle for a plurality of specimen vessels and including a heat sink having a plurality of individual chambers adapted to have seated therein open vessels containing laboratory specimens, a heat source for the heat sink including means to regulate the temperature thereof, a detachable cover assembly adapted to be seated in substantially air-tight relationship on the base over the chambers, said cover assembly comprising depending side walls including opposing end portions to engage the base in air-tight relationship, at least one rigid horizontal tube member carried by and joined to the opposing side walls and open to the atmosphere through at least one side wall, the tube member passing horizontally over a plurality of said chambers in close proximity thereto and carrying a plurality of downwardly directed air orifices aligned respectively with the plurality of chambers below, and means to establish sub-atmospheric pressure in the closed space whereby air is drawn into the tube member and discharged downwardly in a plurality of jet streams into the respective vessels disposed in the chambers.

3,847,201
AUTOMOTIVE SUN SCREEN FRAME

Harold Kalish, 7400 Sabino Vista Dr., Tucson, Ariz. 85715

Filed Dec. 13, 1973, Ser. No. 424,357
Int. Cl. E06b *3/30*
U.S. Cl. 160—105 5 Claims

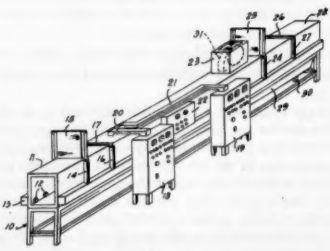


1. A selectively detachable apparatus mountable adjacent an extendable automobile window for shading the interior of an automobile; said apparatus comprising in combination:
   A. a pair of brackets, one of said brackets being attached to each end of the automobile door;
   B. a frame mountable within said brackets, said frame extending upwardly from said door and extending generally adjacent the outline of the automobile window when the latter is in the extended position;
   C. a sun screen for filtering the ray of the sun;
   D. frame means for mounting said sun screen; and
   E. strap means for attaching said frame means to said frame; whereby said sun screen is mounted upon the automobile door adjacent the automobile window.

3,847,202
MICROWAVE DEWAXING

Charles D. Vaughn, Canton, and James D. Jackson, Cleveland Heights, both of Ohio, assignors to TRW Inc., Cleveland, Ohio

Filed Mar. 2, 1973, Ser. No. 337,718
Int. Cl. B22c *17/00*
U.S. Cl. 164—50 10 Claims



1. The method of dewaxing a shell mold containing a wax-type pattern therein which comprises incorporating in the

mold structure a material having a high loss factor in the frequency range of 300 to 30,000 megahertz and subjecting said mold to radiating microwave energy in said frequency range for a period of time sufficient to liquefy the wax pattern.

3,847,203

METHOD OF CASTING A DIRECTIONALLY SOLIDIFIED ARTICLE HAVING A VARIED COMPOSITION

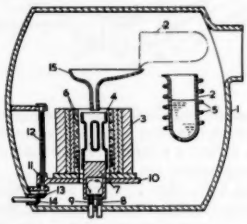
James Edward Northwood, Church Crookham, England, assignor to The Secretary of State for Defense in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Whithall, London, England

Filed June 22, 1972, Ser. No. 265,251

Claims priority, application Great Britain, June 22, 1971, 29125/71

Int. Cl. B22d *25/06*

U.S. Cl. 164—60 **6 Claims**



1. A method of casting a metal article comprising the following steps:

a. introducing a first molten alloy into a mould having an overflow means until molten alloy overflows into the said overflow means;

b. progressively cooling the mould to produce controlled crystal growth in the form of a vertical columnar structure in the molten alloy;

c. introducing a second molten alloy compatible with the first molten alloy into the mould while maintaining the surface of the first alloy in a liquid state; and

d. progressively cooling the mould to produce controlled growth in the form of a vertical columnar structure in the second molten alloy.

3,847,204

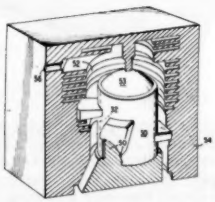
METHOD OF CASTING ALUMINUM CYLINDER

Robert Eugene Frederickson, South Gate, Calif., assignor to McCulloch Corporation, Los Angeles, Calif.

Filed Mar. 17, 1970, Ser. No. 20,202

Int. Cl. B22d *29/00*

U.S. Cl. 164—132 **14 Claims**



1. A method of molding hollow articles comprising the steps of:

a. providing a mold having a cavity for forming the outer surface of the article;

b. providing a core member having an outer surface for forming the inner surface of the article, the outer surface of said core member including a main body portion and at least one protuberance projecting outwardly therefrom;

c. providing at least a portion of the article forming surface of the core member including said at least one protuberance with an anti-adhering substance layer to prevent fusion between that portion of the core and the article;

d. locating the core member with in the cavity of the mold to define an article forming space between the outer surface of the core and the inner surface of the mold;

e. introducing molten die casting material into said article forming space and in surrounding relationship with said at least one protuberance;

f. cooling the molten material until it solidifies into a cast article with a configuration encapsulating said at least one protuberance;

g. releasing the solidified cast article from the mold;

h. machining the main body portion of core from within the cast article leaving only said at least one protuberance remaining, to form a hollow article encapsulating said at least one protuberance of the core;

i. mechanically impacting the cast article including the encapsulated said at least one protuberance of the core to loosen said encapsulated at least one protuberance free from the hollow article.

3,847,205

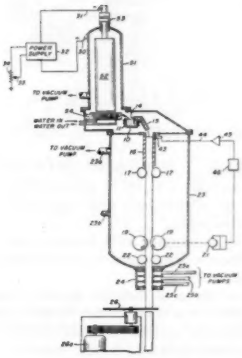
CONTROL APPARATUS FOR CONTINUOUSLY CASTING LIQUID METAL PRODUCED FROM CONSUMABLE ELECTRODES

Ferhun H. Soykan; John S. Huntington, and Falih N. Darmara, all of New Hartford, N.Y., assignors to Special Metals Corporation, New Hartford, N.Y.

Filed Oct. 3, 1972, Ser. No. 294,746

Int. Cl. B22d *17/32*

U.S. Cl. 164—155 **7 Claims**



1. An apparatus for continuously casting prealloyed metal at a predetermined freezing rate to achieve a desired grain structure in the resulting casting, said apparatus comprising: an enclosed chamber having a controlled atmosphere therein, first and second electrodes forming a gap within said enclosed chamber for striking an arc therein, at least one of said electrodes being an ingot and the sole supply of pre-alloyed metal having a composition corresponding to the composition of a pre-alloyed continuous casting to be ultimately formed,

a power supply connected to said electrodes for melting the electrode of pre-alloyed metal,

electrode position control means including a drive for adjusting said gap to maintain an arc between said electrodes,

means spaced from said electrode of pre-alloyed metal for collecting liquid metal therefrom to form a homogeneous stream of molten metal within said enclosed chamber,

an open-ended fluid-cooled mold receiving a continuous stream of molten metal from said means for collecting liquid metal and partially solidifying the molten metal to continuously form a partially solidified casting,

adjustable control means to vary the power delivered by said power supply to said electrodes for controllably varying the rate of continuous melting of the pre-alloyed electrode on the basis of a predetermined solidification rate of the pre-alloyed metal by said mold to form said pre-alloyed casting with a desired grain structure, and

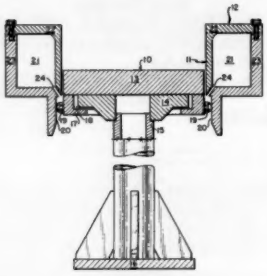
means for continuously withdrawing and solidifying the partially solidified casting from said mold for displacement from said chamber.

3,847,206

SELF-CENTERING BOTTOM BLOCK ASSEMBLY

John J. Foye, Livermore, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

Filed June 14, 1972, Ser. No. 262,509
Int. Cl. B22d *11/08*
U.S. Cl. 164—274 **4 Claims**



1. In a vertical D.C. casting apparatus for light metals comprising an open-ended D.C. mold and a bottom block assembly adapted to be inserted into said mold prior to casting the improvement comprising

a. a bottom block adapted to be inserted into said mold and having sufficient dimensions to thereby seal the discharge end of said mold;

b. a vertically movable member smaller than the bottom block upon which the bottom block is supported, the upper horizontal surfaces of said member adapted for slidable contact with said bottom block;

c. retaining means to loosely lock said bottom block to said support member so as to allow horizontal movement of said bottom block;

d. a plurality of vertically disposed guide surfaces below the bore of said mold and separate therefrom and in a fixed spacial relationship therewith, said guide surfaces being positioned no closer than the projected perimeter of the mold bore and thereby adapted to guide said bottom block into said mold bore; and

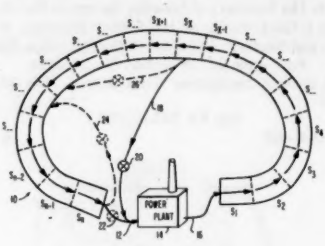
e. a plurality of guide means associated with said bottom block which are adapted to ride on said guide surfaces as the bottom block is raised into position within the mold or withdrawn therefrom for aligning said bottom block with respect to said mold and preventing contact between said bottom block and said bore.

3,847,207

METHOD FOR DETERMINING AND CONTROLLING LIQUID COOLING SYSTEM CHARACTERISTICS

Charles W. Weber; C. Olen Rucker; Patrick L. Peavy; Pak-Fat (William) Woo, and James E. Bear, all of Houston, Tex., assignors to Brown & Root, Incorporated, Houston, Tex.

Filed Apr. 26, 1972, Ser. No. 247,703
Int. Cl. G05d *23/00*
U.S. Cl. 165—1 **12 Claims**



1. A method for operating a liquid cooling system including a cooling reservoir having a surface exposed to the atmosphere along at least a portion of a flow path of the reservoir, the method comprising the steps of:

establishing a plurality of reservoir segments each representing specified time intervals and together representing at least a portion of an overall flow pattern of the cooling system;

determining an initial thermal characteristic of at least one of the segments at a first time and at a predetermined location in the cooling system;

at least periodically determining the thermal characteristic of the one segment at successive specified time intervals after said first time; and,

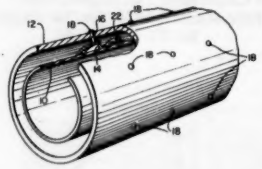
modifying the flow pattern of the cooling system responsively to the determined thermal characteristics of the at least one segment.

3,847,208

STRUCTURAL HEAT PIPE

Stanford Ollendorf, Silver Spring, Md., assignor to The United States of America as represented by the National Aeronautics and Space Administration, Washington, D.C.

Filed Sept. 14, 1973, Ser. No. 397,476
Int. Cl. F28d *15/00*
U.S. Cl. 165—1 **5 Claims**



1. A combined structural reinforcing element and heat transfer member being placed between a structural wall of a housing and an outer insulation blanket disposed thereover and spaced apart therefrom, said element comprising a heat pipe, one side of said heat pipe supporting said outer insulation blanket, the opposite side of said heat pipe being connected to said structural wall to thereby provide structural reinforcement therefor, said element being such that heat penetrating through said outer insulation blanket reaches said heat pipe and is drawn off, thereby reducing thermal gradients in said structural wall of the housing.

3,847,209

TEMPERATURE CONTROLLED SYSTEMS

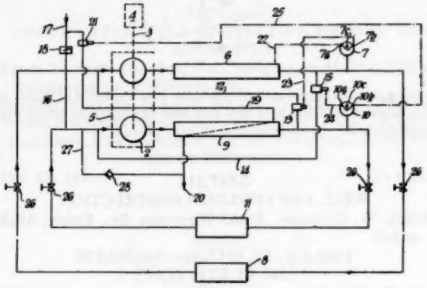
John Robert Mascall, Harrow Weald, England, assignor to Churchill Instrument Company Limited, Greenford, Middlesex, England

Filed Mar. 21, 1973, Ser. No. 343,359

Claims priority, application Great Britain, Apr. 21, 1972, 18598/72

Int. Cl. F25b 29/00; F28f 1/00

U.S. Cl. 165—14 11 Claims



1. A temperature control system which comprises a fluid heating circuit which includes a first load; said heating circuit having a first pump, fluid heating means and first control means; said first control means being responsive to the temperature of fluid in the heating circuit having predetermined maximum and minimum temperature operative conditions, said first control means being operatively connected to the heating means to actuate the heating means at its minimum temperature operative condition; a fluid cooling circuit which includes a second load; said cooling circuit having a second pump, fluid cooling means and second control means; said second control means being responsive to the temperature of fluid in the cooling circuit and having predetermined maximum and minimum temperature operative conditions, said second control means being operatively connected to the cooling means to actuate the cooling means at its maximum temperature operative condition; and wherein the first control means, when at its maximum temperature operative condition, is arranged to actuate normally closed first valve means which when actuated allows fluid to flow from the cooling circuit into the heating circuit, and the second control means, when at its minimum temperature operative condition is arranged to actuate normally closed second valve means which when actuated allows fluid to flow from the heating circuit into the cooling circuit.

3,847,210

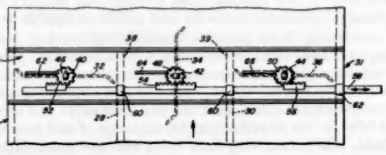
DAMPER SEQUENCER

James E. Wells, Rt. 3, Box 163-A, Pensacola, Fla. 32503

Filed Sept. 14, 1972, Ser. No. 288,984

Int. Cl. F28f 27/02

U.S. Cl. 165—103 9 Claims



1. A fluid-flow apparatus, comprising, in combination:

a. damper means associated with three fluid-flow paths for moving between a position blocking each flow path and a position unblocking same, two of the paths normally blocked and one of the paths normally unblocked, the damper means including a frame provided with wall portions forming the flow paths, damper elements arranged in the flow paths, and shafts pivotally mounted to the frame, said damper elements mounted on the shafts for pivotal movement therewith,

b. means for selectively moving the damper elements in a predetermined sequence retaining in a blocked position one of the two normally blocked flow paths whenever the other flow path of the pair is in unblocked position, the moving means including pinion gears mounted on said shafts for movement therewith, rack gear segments associated with said pinion gears, and a longitudinal carrier bar mounted on said frame for longitudinal movement with respect thereto, said gear segments mounted on said carrier bar for movement therewith, and a pair of the gear segments arranged for always movably engaging the pinion gear associated with the normally unblocked one of the flow paths and sequentially engaging only one of the other, normally blocked flow paths for obtaining a constant flow from the three paths, the damper element of the flow path associated with the disengaged pinion gear being arranged in a position blocking the flow path associated therewith.

3,847,211

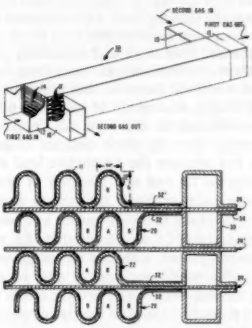
PROPERTY INTERCHANGE SYSTEM FOR FLUIDS

Halbert Fischel, Van Nuys, and Anthony Dichiro, Sun Valley, both of Calif., assignors to Sub-Marine Systems Incorporated, Tarzana, Calif.

Filed Jan. 28, 1969, Ser. No. 794,705

Int. Cl. F28b 3/12

U.S. Cl. 165—166 13 Claims



1. A property interchange system for fluids comprising:

a plurality of corrugated membranes of a material of low conductivity with respect to said property having corrugations lying substantially parallel to a selected longitudinal axis, said membranes being stacked coextensively to define a multilayer laminate body, the corrugations being in-phase relation and the interior space between each successive pair of membranes defining fluid passages substantially separated by said corrugations into separate longitudinal passageways;

first header means communicating with first fluid passage sets between first selected pairs of membranes to pass a first fluid therealong;

second header means communicating with second fluid passage sets between second selected pairs of membranes to pass a second fluid therealong in countercurrent relationship to the first fluid, said first and second selected pairs of membranes alternating across the height of the laminate body, such that different fluids pass on opposite

sides of each membrane and property transfer takes place through each membrane;

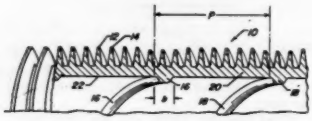
the corrugations of said membranes having a height to width ratio of approximately one, there being in excess of approximately 20 corrugations per inch and each passageway thereby being substantially encompassed by passageways for the other fluid; means laterally disposed relative to the longitudinal axis along said membranes for equalizing the property state of at least one of said fluids at least one region along said longitudinal axis.

3,847,212

HEAT TRANSFER TUBE HAVING MULTIPLE INTERNAL RIDGES

James G. Withers, Jr., Dearborn, Mich., and Klaus K. Rieger, Decatur, Ala., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed July 5, 1973, Ser. No. 376,507
Int. Cl. F28f 1/42
U.S. Cl. 165—179 **5 Claims**



1. A metal tube having an improved heat transfer rate to or from an internally flowing fluid, characterized in that said tube has at least one integral external helical fin of a predetermined pitch distance and lead angle and a plurality of integral multiple start internal helical ridges extending radially inwardly from the inner wall of the tube, said plurality of internal helical ridges having a lead angle of less than 60° (as measured from a perpendicular to the tube axis) and a pitch distance which is greater than the pitch distance of said at least one external fin but wherein the respective lead angles of said at least one external fin and said plurality of internal ridges are different from each other in magnitude and/or sense, said inner wall of said tube being so shaped as to define, in a longitudinal sectioned profile, an intermediate flat portion between adjacent internal ridges, with said ridges having a ridge cross-sectional profile which includes a pair of side boundaries connecting the flat inner wall portions of the tube intermediate adjacent pairs of ridges and the tips of the ridges, said side boundaries being comprised of concave and convex portions which connect at a point of inflection radially outward from the tip and at a distance from the tip which is less than the height of the ridge.

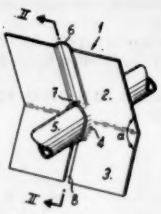
3,847,213

FINNED-TUBE HEAT EXCHANGER

Ernest Stich, Grand Lancy-Geneva, Switzerland, assignor to Urs Dreier-Saner, Kleinlutzel, Frohmatt, Soleure, Switzerland, a part interest

Filed Feb. 14, 1973, Ser. No. 332,438
Claims priority, application Switzerland, Feb. 15, 1972, 2250/72; Apr. 6, 1972, 5080/72; July 27, 1972, 11236/72
Int. Cl. F28f 1/30
U.S. Cl. 165—181 **5 Claims**

1. A finned-tube heat exchanger comprising a cylindrical conduit and a plurality of thin metal fins spaced apart along the conduit in heat exchange relation therewith, each said fin having a cylindrical collar that bears resiliently against the conduit, each fin being in the form of a dihedral disposed in two planes, the fin having a corrugation therein extending from said cylindrical collar to the edge of the fin, the fin also



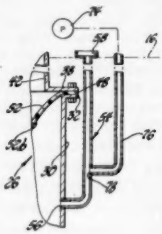
having a slot therein extending from said cylindrical collar to the edge of said fin, said slot and said corrugation being perpendicular to the intersection of said planes.

3,847,214

WELL AND PIPELINE CONSTRUCTION

Walton W. Cushman, 36483 Gloucester Dr., Fraser, Mich. 48026

Filed Apr. 13, 1972, Ser. No. 243,570
Int. Cl. E21b 31/00
U.S. Cl. 166—.5 **1 Claim**



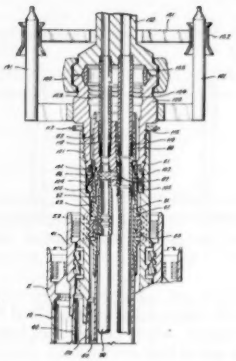
1. A safety shut-off valve for use in combination with a delivery conduit flowing a selected fluid therethrough, comprising a unitary one-piece generally tubular inflatable elastomeric member situated within said delivery conduit, said delivery conduit comprising a well casing, a valve housing serially connected to said well casing, said generally tubular member being axially elongated and having a circular configuration when viewed in a cross-sectional plane transverse and normal to the axis of said tubular member, said tubular member having respective axial ends thereof secured to said valve housing as to be thereby anchored against movement relative thereto, means associated with said tubular member for at times supplying a pressurizing fluid against said tubular member causing said tubular member to inflate substantially uniformly radially inwardly in order to thereby terminate further flow of said selected fluid through said delivery conduit, said means associated with said tubular inflatable member comprising fluid pressure transmitting conduit means having one end in communication with a generally annular space defined generally between said tubular member and said valve housing and having an other end elevationally spaced a substantial distance from said one end, said other end serving as an inlet for the introduction therethrough of said pressurizing fluid, said pressurizing fluid being effective upon entering said annular space to resiliently urge said tubular member to resiliently deflect radially inwardly in a manner whereby an inner passage defined by said resiliently deflecting tubular member continues to progressively reduce in cross-sectional

area until such time as sufficient closing pressure is applied by said pressurizing fluid against said tubular member causing complete closure of said inner passage, and passage means having an outlet communicating with said conduit means at a point which is at a relatively low elevational level, said passage means being operatively connectable to a source of air under pressure for delivering said air to said conduit means in order to permit said air to form bubbles in said conduit means to displace from said conduit means any liquid contained in said conduit means comprising said pressurizing fluid.

3,847,215
UNDERWATER WELL COMPLETION METHOD AND APPARATUS

David P. Herd, Houston, Tex., assignor to McEvoy Oilfield Equipment Co., Pittsburgh, Pa.

Division of Ser. No. 103,839, Jan. 4, 1971, Pat. No. 3,800,869, which is a continuation of Ser. No. 792,912, Jan. 22, 1969, abandoned. This application Aug. 13, 1973, Ser. No. 387,915
Int. Cl. E21b *33/035*
U.S. Cl. 166—.6 **32 Claims**



1. A method of suspending at least one string of pipe in a well with only one trip into the well comprising the following steps:

running a well pipe hanger assembly which suspends the pipe string into the well on at least two handling strings; aligning the well pipe hanger assembly in a predetermined position within the well;

landing the well pipe hanger assembly within the well;

locking down the well pipe hanger assembly within the well; testing the seals in the well pipe hanger assembly by pressurizing the handling strings;

testing the integrity of the packer in the pipe string by monitoring one of the handling strings; and

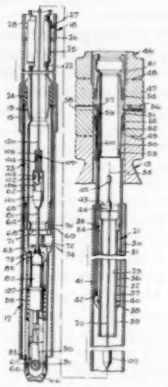
removing the handling strings.

3,847,216
WELL SAFETY VALVE HAVING MECHANISM SHIELDED FROM FLUID FLOW

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Varco International, Inc., Los Angeles, Calif.

Filed Oct. 29, 1973, Ser. No. 410,417
Int. Cl. E21b *43/12*
U.S. Cl. 166—72 **14 Claims**

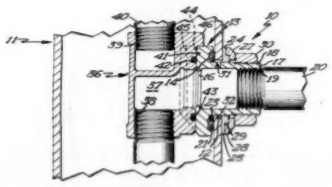
1. In well safety apparatus, including a safety valve body to be lowered into a well and located therein, a main valve element movable vertically within said body between open and closed positions, a pilot valve element movable relative to said main valve element between an open position permitting fluid flow through a bleed passage from one side of the main valve element to the other and a closed position closing off such flow, and a member extending upwardly to the surface of the earth for actuating said valve elements; the improvement comprising an operator connectible to said member for actuation thereby and having a portion received within the interior of at least one of said valve elements and movable upwardly relative thereto by upward displacement of said actuating member, and reversing means actuable in response to said upward movement of said portion of said operator which is within said one element to displace said pilot valve element downwardly.



3,847,217
PITLESS WELL ADAPTER

Dean Kramer, 105 Mission Dr., Mason City, Iowa 50401, and Jay D. Crawford, 113 4th St. North, Sheffield, Iowa 50475

Filed June 22, 1973, Ser. No. 372,858
Int. Cl. E21b *33/03;* **F16l** *55/00*
U.S. Cl. 166—85 **4 Claims**



1. A pitless well adapter for attachment to a well casing having an opening therein spaced below the upper end of the casing, comprising:

a mounting member having a front face and a rear face and adapted to be positioned interiorly of the casing against the inner surface thereof, said mounting member having an opening therein and having an annular lip integral with said front face and projecting forwardly therefrom, said mounting member having a pair of vertically extending elongate spaced apart guide elements on the rear face thereof and defining a pair of downwardly tapering guideways on opposite sides of said opening,

a cylindrical nipple integral with said mounting member and projecting forwardly from the front face thereof through the opening in the casing, said nipple communicating with the opening in the mounting member and having an externally and internally threaded outer end portion, the exter-

nal diameter of said nipple being only slightly less than the diameter of the opening in the casing to define an annular space therebetween, an interconnecting passage extending through the cylindrical wall of the nipple and intercommunicating the interior of the nipple with the annular space,

a coupling member having a passage therethrough and being adapted to be connected in communicating relation with the well pipe,

a pair of vertically extending spaced apart, elongate downwardly tapering guide elements on said coupling member engagable with said guideways on said mounting member to urge said coupling member into fluid sealing relation with the rear face of the mounting member and to intercommunicate the passage of the coupling member with the opening in the mounting member,

an interior annular compressable sealing element positioned around and engaging said nipple and being engaged by said lip of said mounting member, the interior sealing element adapted to be interposed between the front face of the mounting member and the inner surface of the casing to form a seal thereat,

an exterior sealing element positioned around and engaging the nipple and adapted to engage the exterior surface of the casing adjacent the opening therein, said sealing elements cooperating with said nipple and said casing to define an annular pressure passage located between the sealing elements and exteriorly of the nipple,

an annular clamping member corresponding generally in size to the size of said exterior sealing element and engaging the latter,

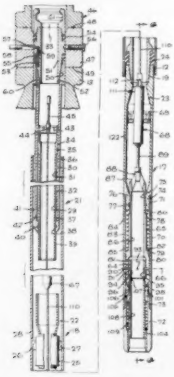
and an internally threaded clamping nut threadedly engaging the exterior threads on the nipple and urging said clamping member into clamping relation with the exterior sealing element and clamping the mounting member on the casing.

3,847,218

BALL TYPE WELL SAFETY VALVE APPARATUS

George I. Boyadjieff, Woodland Hills, and Ben A. Otsap, Encino, both of Calif., assignors to Varco International, Inc., Los Angeles, Calif.

Filed Oct. 29, 1973, Ser. No. 410,477
Int. Cl. E21b *33/03, 43/12*
U.S. Cl. 166—224 A **17 Claims**



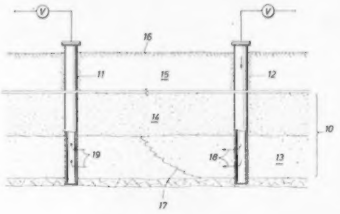
1. In well safety apparatus actuable by an elongated member extending downwardly into a well and movable longitudinally from a location near the surface of the earth: a safety valve unit to be located deep within the well and comprising a body structure having a passage through which production fluid flows upwardly, a ball valve in said body structure containing a passage through which said production fluid can flow, a valve carrier structure mounted for upward and downward movement in the body by said elongated member and to which the ball valve is connected for pivotal movement between an open position in which said passage in the ball valve extends vertically to pass said production fluid and a closed position in which said passage in the ball extends horizontally to block off upward fluid flow past the ball valve, means for pivoting said ball valve from said closed position to said open position in response to upward movement of said valve carrier structure, and an upwardly facing valve seat engageable with said ball valve about an unapertured region thereof in said closed position of the ball valve.

3,847,219

PRODUCING OIL FROM TAR SAND

Kuo H. Wang; Michael Prats, and Don A. Campbell, all of Houston, Tex., assignors to Shell Canada Limited, Toronto, Canada and Shell Explorer Limited, Houston, Tex.

Filed Oct. 3, 1973, Ser. No. 402,930
Int. Cl. E21b *43/00, 43/24*
U.S. Cl. 166—263 **20 Claims**



1. A process for recovering bituminous fluid from a bituminous sand formation which contains at least one water-permeable zone and at least one adjacent, water-impermeable zone and which has been penetrated by at least one injection well and at least one production well, both of which communicate with said water-permeable zone, said process comprising:

a. injecting a hot aqueous fluid into said formation through at least one well while producing fluids at at least one other well to establish a hot, water-permeable channel extending between the injection and production wells;

b. continuing the injection of said hot aqueous fluid at a rate at least sufficient to maintain said bituminous fluid mobility within said channel and to increase the mobility of the bituminous fluid in the bulk of the bituminous sand formation surrounding said path to at least 15 millidarcies per centipoise;

c. reducing the pressure in said formation by increasing the production of fluids at the production well; and

d. recovering bituminous fluid from the fluids produced.

3,847,220

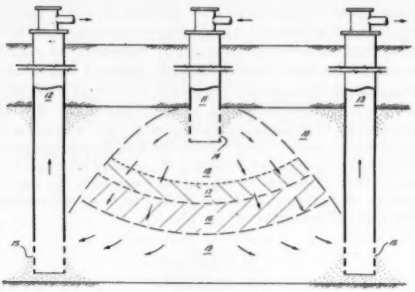
MISCIBLE DISPLACEMENT OF PETROLEUM USING SEQUENTIAL ADDITION OF CARBON DISULFIDE AND A HYDROCARBON SOLVENT

Joseph C. Allen, Bellaire; Jack F. Tate, and Roland B. Stelzer, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,407
Int. Cl. E21b *43/16*
U.S. Cl. 166—273 **3 Claims**

1. A process for recovering petroleum from a reservoir comprising:

sequentially introducing at least two solvent slugs into the reservoir, a first solvent slug having a density greater than water and a second solvent slug having a density less than water, followed by an aqueous driving fluid wherein the



second solvent slug is injected prior to the first solvent slug, and

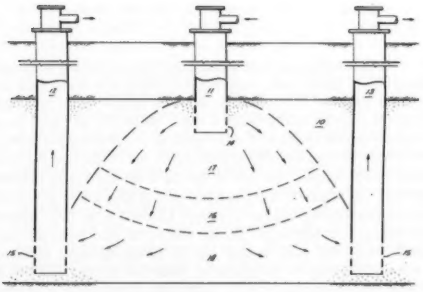
producing petroleum and solvents at a point below the point of introduction of the solvent slugs.

3,847,221

MISCIBLE DISPLACEMENT OF PETROLEUM USING CARBON DISULFIDE AND A HYDROCARBON SOLVENT

Joseph C. Allen, Bellaire; Jack F. Tate, and Roland B. Stelzer, both of Houston, all of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,415
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **16 Claims**



1. A process for recovering petroleum from a reservoir comprising:

a. introducing a slug of solvent mixture for the petroleum into the reservoir which solvent has a density equal to or greater than water and comprises carbon disulfide and an aromatic hydrocarbon or aliphatic hydrocarbon,

b. introducing, following the solvent mixture, an aqueous fluid into the reservoir, to force the solvent through the reservoir, and

c. producing the petroleum and solvent at a point below the point of introduction of the solvent.

3,847,222

TREATMENT OF AN UNDERGROUND FORMATION CONTAINING WATER-SENSITIVE CLAYS

William B. Braden, Jr., Houston, Tex., assignor to Texaco Inc., New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,721
Int. Cl. E21b *43/24*
U.S. Cl. 166—303 **10 Claims**

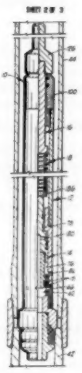
1. A method of treating a water-sensitive sandcontaining formation to improve the water permeability of the sand portion which comprises in combination injecting into said formation and into contact with said sand portion thereof, at an elevated temperature and a superatmospheric pressure, steam in an amount sufficient to provide from about 0.1 to about 10 percent by volume thereof per pore volume of said sandy portion of the formation, thereafter injecting into said formation and into contact with the resulting treated sand portion from about 5 to about 20 percent by weight of a guanidine salt in a polar oxygenated aliphatic hydrocarbon solvent, and maintaining said guanidine salt in contact with the sand portion of the formation for a time period sufficient to effect stabilization of said sand portion.

3,847,223

RETRIEVABLE FLUID CONTROL VALVE AND METHOD

Theron A. Scott, Odessa, Tex., and Walter E. Hyde, Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed July 27, 1973, Ser. No. 383,238
Int. Cl. E21b *43/25, 43/27*
U.S. Cl. 166—305 R **12 Claims**



1. A retrievable fluid control valve for seating in a seating nipple within a tubing string to control the flow of fluid downwardly through the tubing string in response to fluid pressure applied thereto, comprising:

a valve body having opposite end portions and a longitudinal passageway extending therethrough and having a fluid flow control port and a valve member actuator port formed therein, each port communicating between the passageway and the outer periphery of said valve body;

a valve member slidably disposed within the passageway of said valve body for longitudinal movement therein between a closed position blocking fluid flow between the outer periphery of said valve body and the passageway therethrough and an open position allowing fluid flow between the outer periphery of said valve body and the passageway through the fluid flow control port responsive to fluid pressure acting thereon through the valve member actuator port in said valve body;

means formed on said valve body intermediate one end portion thereof and the fluid flow control port for seating the valve body in the seating nipple;

means formed on said valve body for providing a fluid-tight seal between the outer periphery of said valve body and the tubing string intermediate the fluid flow control port and the one end portion thereof;

piston means slidably disposed in the passageway adjacent to the opposite end portion of said valve body and longitudinally movable therein in response to the fluid pressure within the tubing string acting thereon; and

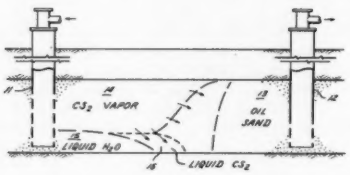
biasing means disposed intermediate said valve member and said piston means for urging said valve member into the closed position in response to the movement of said piston means responsive to the application of fluid pressure to said piston means.

3,847,224

MISCIBLE DISPLACEMENT OF PETROLEUM

Joseph C. Allen, Bellaire, and Jack F. Tate, Houston, both of Tex., assignors to Texaco Inc., New York, N.Y.

Filed May 4, 1973, Ser. No. 357,406
Int. Cl. E21b *43/16*
U.S. Cl. 166—274 **9 Claims**



1. A method for recovering petroleum from a reservoir having at least one injection well and one production well penetrating and in communication with the reservoir comprising:

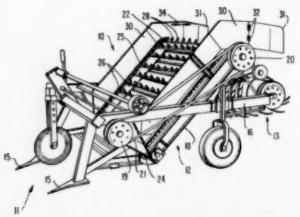
forcing carbon disulfide substantially horizontally through the reservoir with a driving fluid from the injection well to the production well wherein the carbon disulfide is injected in a vaporized state and condensation of the carbon disulfide takes place before it reaches the production well.

3,847,225

PEANUT HARVESTER

Carroll J. Whitfield, and Jack C. Whitesides, both of Columbus, Ga., assignors to Kelley Manufacturing Co., Columbus, Ga.

Filed Nov. 16, 1972, Ser. No. 307,181
Int. Cl. A01d *29/00*
U.S. Cl. 171—101 **5 Claims**



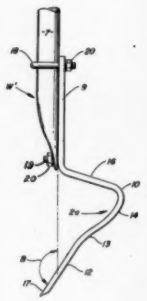
1. An apparatus for harvesting peanuts including plow means movable forwardly through the ground to unearth peanut plants and an inclined conveyor means behind said plow means for retrieving the plants from the ground and moving the plants in an upward direction and dropping the plants, the combination therewith of inverting apparatus positioned behind and below the upper end of said conveyor means for catching and inverting the plants dropped from said conveyor means comprising a pair of plant propelling means each rotatable about an axis extending laterally of the direction of movement of said apparatus and including a plurality of spaced wall members with noncircular peripheries with the peripheries of said spaced wall members generally forming a hyperboloid as each plant propelling means rotates, a plurality of spaced rods extending generally rearwardly of said conveyor means with portions thereof adjacent said conveyor means extending around the upper portion of each of said plant propelling means and between and below the upper peripheries of said spaced wall members and extending rearwardly from each of said plant propelling means and forming a pair of twisted paths for twisting the plants over and inwardly about their directions of movement away from the conveyor means and rolling the foliage of the plants inwardly between the paths of movement of the plants.

3,847,226

WEEDER

Richard C. Long, 1303 Webb Rd., Lakewood, Ohio 44107

Continuation-in-part of Ser. No. 208,587, Dec. 16, 1971, abandoned. This application Dec. 5, 1973, Ser. No. 421,999
Int. Cl. A01b *1/00*
U.S. Cl. 172—371 **5 Claims**



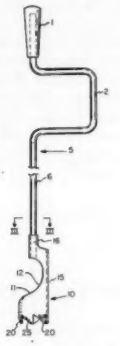
1. A manually operable weeder tool for removing weeds and their roots from lawns and turf by lifting the weed and root with a divot of the turf and removal of the weed and roots from the divot, comprising a rigid blade (**2**, **2***a*) and an attached handle (**4**, **7**) with overlapping, connecting portions (**8**, **9**) firmly connecting the upper end of the blade and the lower end of the handle, the blade having a forward face intended to face the weed to be pulled and comprising a straight, lower, earth-penetrating tongue portion (**12**) with a tip (**17**) adapted to engage, lift and separate the weed and root from the earth and divot, the said handle (**4**, **7**) being inclined forwardly within the grasp of an operator when the tongue (**12**) of the blade stands vertically, said blade also comprising a step portion (**16**) joined at its forward end to said connecting portion (**8**, **9**) and extending rearwardly toward the operator when the forward face of the blade faces the weed to be pulled, said blade also comprising a fulcrum portion (**14**) joined to said step with a rearwardly disposed rounded juncture (**10**) which forms the bluntly rounded apex of a V-shaped part of the blade comprising the step and fulcrum, said step lying at about right angles to the plane of the tongue (**12**) to facilitate downward entry of said tip and tongue into the earth under foot pressure on the step, said fulcrum having a convex rearward face and sloping downwardly and forwardly from its juncture (**10**) with the step and joining said tongue (**12**) in a curve (**13**) which is concave rearwardly, said fulcrum providing down-

wardly and forwardly sliding support for the blade tending to move said tip forwardly and upwardly into progressively tighter engagement with the root to lift, or lift and sever, the root after said fulcrum has engaged the earth and has been forced downwardly and forwardly while said handle is pulled rearwardly, said handle being long enough to be within easy grasp of a standing operator whose foot is bearing on the step of the blade.

3,847,227
GARDEN TOOL

Herman A. Myers, 112 No. Liberty, Masontown, Pa. 15461

Filed June 5, 1973, Ser. No. 367,135
Int. Cl. A01b *1/16, 45/02*
U.S. Cl. 172—378 **2 Claims**



1. A hand-operated garden tool for weeding and boring holes in the earth comprising:

a. an elongated rod shaped member including a handle at one end and an elongated shaft at the other end, said elongated member adapted for rotative movement about its longitudinal axis when rotatably manipulated by the operator;

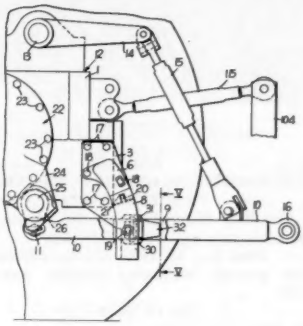
b. a cylindrical boring bit having a sidewall which defines an open interior, said bit fixedly attached at one end thereof to the end of the shaft, the longitudinal axis of the cylindrical bit aligned with the longitudinal axis of the shaft, said boring bit also including a plurality of teeth depending downwardly from the terminal edge of the sidewall in spaced apart relationship around the perimeter thereof, said teeth comprising a plurality of inclined driving teeth angularly bent toward the open interior of the bit, each of said driving teeth having a leading edge and a trailing edge, said trailing edge being inclined a greater angle, relative to the sidewall of the bit, than the angular inclination of the leading edge and a plurality of longitudinally extending, cutting teeth aligned coextensively with the sidewall of the bit, said driving teeth and said cutting teeth alternately positioned with respect to one another around the perimeter of the sidewall of the boring bit, said sidewall also having a cutout portion positioned above the teeth to permit the removal of weeds and earth from the interior of the bit.

3,847,228
HITCH SWAY LIMITING DEVICE

Michael L. Slosiarek, Milwaukee, Wis., and Richard E. Gatch, Gering, Nebr., assignors to Allis-Chalmers Manufacturing Company, Milwaukee, Wis.

Filed Oct. 26, 1970, Ser. No. 84,083
Int. Cl. A01b *59/043*
U.S. Cl. 172—450 **11 Claims**

1. A sway limiting device for a three-point tractor hitch comprising, a vehicle chassis, a pair of laterally spaced brackets mounted on said vehicle chassis, a pair of lower draft arms universally connected to said vehicle chassis and connected to an implement, a two piece sway block with each piece removably mounted on each of said brackets, a reversible wear plate removably mounted on each of said draft arms for selectively

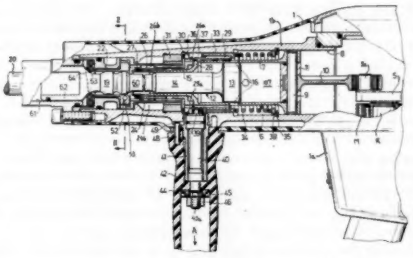


engaging each of said sway blocks, said wear plates having predetermined thicknesses defining wear surfaces spaced laterally at predetermined dimensions relative to the lateral mounting surface of said wear plate on said draft arms thereby provide predetermined sway restriction and selectively alternative lateral operating spaces between said draft arms.

3,847,229
PORTABLE IMPACT WRENCH

Karl Wanner, Echterdingen; Wolfgang Schmid, Plattenhardt; Hubertus Karl, Bernhausen, and Jorg Falchle, Bempflingen, all of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed May 24, 1973, Ser. No. 363,711
Claims priority, application Germany, June 16, 1972, 2229388
Int. Cl. B25d *11/04*
U.S. Cl. 173—48 **13 Claims**



1. In a portable power tool, particularly in an impact wrench or drill, a combination comprising a housing; drive means provided in said housing and including an output member movable forwardly and rearwardly; a tool holder rotatably and reciprocably mounted in said housing in front of said output member; impeller means provided in said housing and operative to strike against said tool holder in response to forward movements of said output member; and means for normally rotating said tool holder in response to forward movements of said output member, including an input element rotatably surrounding and movable with said output member, blocking means provided in said housing for normally holding said

input element against rotation, an intermediate element rotatably mounted in said housing, said elements having tubular portions telescoped into each other and provided with mating inclined teeth or threads so that the forward and rearward movements of said input element result in rotation of said intermediate element in opposite directions, an output element rotatably mounted in said housing, said tool holder being movable axially relative to and being rotatable with said output element, and one-way clutch means provided between said intermediate element and said output element to rotate said tool holder by way of said output element in response to forward movements of said input element.

3,847,230

SYSTEM FOR DRIVING OBJECTS USING PRESSURE OR TRACTION FORCES

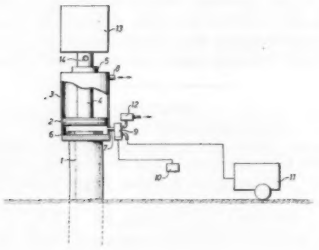
Oskar Vive Elon Blomquist, Enskede, Sweden, assignor to Stabilator Aktiebolag, Bromma, Sweden

Filed Aug. 16, 1972, Ser. No. 280,945

Claims priority, application Sweden, Aug. 26, 1971, 10831/71

Int. Cl. E02d 7/10

U.S. Cl. 173—127 **4 Claims**



1. An arrangement for driving objects by pressure or traction forces, for instance for pile-driving into the ground, said arrangement comprising: a piston-cylinder driving means including a piston adapted to reciprocate in a cylinder; force transmission means comprising a wall of said cylinder at one end of said driving means for maintaining said driving means by gravity in permanent force transmitting engagement with an object to be driven; an inertial mass associated with said driving means through said piston for developing a force for permanent gravitational transmission to said object; a cylinder space on the side of the piston toward said object for communicating with a source of pulsating supply of driving medium; valve means for opening and closing communication between said cylinder space and said source of pulsating supply for initially raising said inertial mass against the force of gravity and away from said object, for then releasing said inertial mass to enable the same to fall by gravity in the direction of said object, and for then again raising said inertial mass for another driving cycle, so that the gravitational weight and kinetic energy of said inertial mass combine to drive the associated object when said inertial mass moves in the direction of said object under the influence of gravity and impacts against said object through said force transmission means; and a cylinder space on the other side of the piston for communicating with an outlet; whereby, in use, the object to be driven is maintained permanently loaded by a gravitational force including that of said inertial mass and is driven by a pulsating force superposed on said permanent force, including kinetic energy in said inertial mass developed by the gravitational pull on said inertial mass when said valve means enables said inertial mass to fall by gravity and impact against said object.

3,847,231

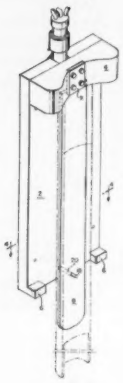
POLE REINFORCEMENT INSTALLATION

James E. Warjone, Seattle, Wash., and Albert C. Wilkison, New Westminster, British Columbia, Canada, assignors to Truckweld Equipment Co., Seattle, Wash.

Filed May 1, 1972, Ser. No. 249,249

Int. Cl. E04h 12/34, 12/20

U.S. Cl. 173—134 **13 Claims**



1. Driving means for forcing objects into the ground comprising:

hammer means having sufficient weight to impact drive an object into the ground,

fluid-powered cylinder-rod means having a cylinder secured to the hammer means and a rod, said cylinder extending downwardly from the hammer means along a substantial portion of the cylinder length,

means suspending the rod of the cylinder-rod means adjacent to and above the object to be driven,

guide means coupled to the hammer means and in telescopic engagement with the object to assure proper contact with the object to be driven as the hammer falls downwardly, said guide means including a downwardly extending tongue adapted to extend into the interior of a hollow metallic splint and guide the hammer during driving of the splint, said guide means being approximately centrally located on said hammer means and extending downwardly parallel to said cylinder to guide the center of the mass of the hammer means and cylinder approximately along the center line of the splint, and

means providing an intermittent source of fluid under pressure in communication with the cylinder-rod means whereby admission of fluid raises the hammer means and exhaust of fluid allows the hammer means to drop upon the object to be driven for driving the object into the ground.

3,847,232

PNEUMATIC PERCUSSIVE TOOL

Nikolai Alexandrovich Klushin, ulista Narodnaya 1, kv. 23; Petr Avramovich Maslakov, ulitsa Voskhod 7, kv. 42; Viktor Evdokimovich Kilin, ulista Posadochnaya, 44, korpus 2, kv. 40; Oleg Alexandrovich Yankovsky, ulista Soni Morozovoi, 175 A, kv. 95, and Anas Galimovich Galimov, ulista Kuibysheva, 115, kv. 13, all of Sverdlovsk, U.S.S.R.

Filed Oct. 3, 1973, Ser. No. 403,007

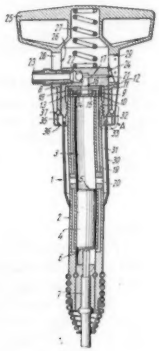
Claims priority, application U.S.S.R., Oct. 3, 1972, 1834043

Int. Cl. B25d 9/04

U.S. Cl. 173—168 **2 Claims**

1. A pneumatic percussive tool comprising: a cylinder having an upper end portion and a lower end portion; a hammer disposed in said cylinder for reciprocating movement there-

within under the action of compressed air, therewith to impart blows to a working implement received in the front end portion of said cylinder; air-distribution means, said means being connected to a source of compressed air during the operation of the tool, and disposed in the rear end face of the upper end portion of said cylinder for distributing the compressed air provided from the source; a housing fixedly mounted on the rear end portion of said cylinder, for rigidly holding said air-distribution means to said cylinder, at least one portion of the peripheral surface of the front end of said housing having a different diameter, than the other, while the front end face of said front end of said housing is provided with slots; handle means mounted on said housing and axially movable along the outer surface of said housing between a maximum predetermined forward position and a maximum predetermined rearward position, said handle means being provided on the inner surface of the front end part thereof with at least one portion having a diamter which is greater than that of the surface thereof in contact with said housing, and in the wall of the rear end part of that portion with through passages communicating with atmosphere, said handle means being provided for controlling said tool and permitting communication between said air-distribution means and said source upon movement thereof forwardly along the housing towards said maximum predetermined position into the operative position of the tool; a casing mounted on said cylinder forwardly of the housing,



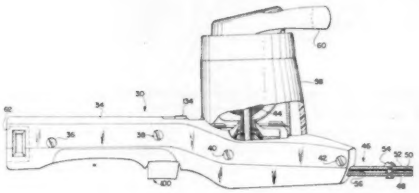
the outside diameter of the rear end portion of the casing being substantially equal to the outside diameter of said portion of said housing, said casing defining together with said cylinder and the front end portion of said housing a manifold for collecting the exhaust air; a shock absorber disposed between said housing and said handle for returning said handle towards said maximum predetermined rearward position into the rearmost inoperative position of the tool and reducing vibration of the handle; said portion of the housing having a diameter smaller than that of the surface of said housing mounting said handle; rear end and front end cavities defined by the axial movement of the handle along the housing towards said maximum predetermined forward position into the foremost operating position, the rear end cavity communicating with said manifold through said slots formed in the front end face of said housing and being defined by said portion of the housing, the inner surface of said handle and the outer surface of the rear end portion of said casing, and said front end cavity communicating with its rear end portion through the front end portion of said rear end cavity, as well as with atmosphere through said passages of the handle, said front end portion also communicating with atmosphere through its open front end portion, which front end portion has a greater cross-sectional area than that of said rear end cavity and is defined by said portion of the handle and the outer surface of said casing so that upon entry of the exhaust air from said manifold into said rear end cavity and into said front end cavity communicated therewith and having a greater cross-sectional area the ambient atmospheric air is sucked in through said passages in the handle walls, whereby the speed of air discharge from said front end cavity is reduced thereby lowering the aerodynamic noise.

3,847,233

TRIGGER MECHANISM FOR HAND-OPERATED POWER DEVICE PROVIDING AUTOMATIC LOCK-OFF AND MANUAL LOCK-ON OPERATION

Richard Warmath Glover, Joppa; Gordon Frederick Musch, Fork, both of Md., and John A. Summa, Anaheim, Calif., assignors to The Black and Decker Manufacturing Company, Towson, Md.

Filed June 29, 1973, Ser. No. 375,160
Int. Cl. B23b *45/00*
U.S. Cl. 173—170 **15 Claims**



1. A trigger mechanism for a hand-operated power tool including an electric motor and an on-off switch operatively associated with the motor and normally biased off, comprising:

a trigger manually movable from a first position to a second position to actuate the switch and turn on the motor, said trigger being normally biased toward its first position; and manually operable locking means movable in two distinct modes of movement, said locking means being normally biased toward a first position, cooperatively engageable with said trigger to prevent movement of said trigger from its first position to its second position, and movable in its first mode toward a second position wherein said trigger is manually movable to its second position to actuate the switch, said locking means being cooperatively engageable with said trigger when each is in its second position to permit said locking means to be released without movement to its first position until said trigger is allowed to return to its first position, said locking means being movable in its second mode to a third position cooperatively engageable with said trigger to lock said trigger in its second position to continuously actuate the switch and operate the motor; and

means biasing said locking means out of said third position to permit automatic disengagement of said locking means from said trigger.

3,847,234

PRESSURE RELIEF DEVICE FOR DRILL BIT LUBRICATION SYSTEM

Percy W. Schumacher, Jr., and Henry W. Murdoch, both of Houston, Tex., assignors to Reed Tool Comapny, Houston, Tex.

Continuation-in-part of Ser. No. 258,516, June 1, 1972, abandoned. This application Feb. 7, 1973, Ser. No. 330,412
Int. Cl. E21b *9/08, 9/18, 9/28*
U.S. Cl. 175—228 **11 Claims**

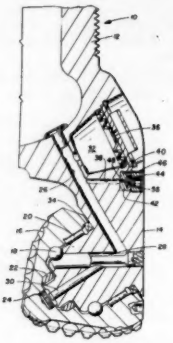
1. A drill bit, comprising

a body,

at least one leg depending from said body,

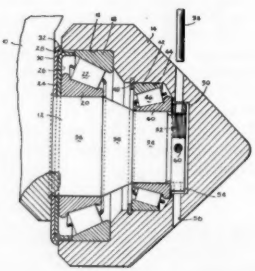
a rotary cutter,

bearing means rotatably mounting said cutter on said leg,
a lubrication reservoir defined in said leg,
means communicating from said reservoir to said bearing means to form a lubrication system,
a compensator diaphragm in communication with said lubrication system,
said compensator diaphragm being exposed to said lubrication system on one side and to the exterior of said leg on



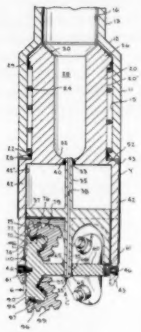
the other side to equalize the pressure within said lubrication system with exterior pressure whereby pressure differentials between said lubrication system and the exterior of said leg are minimized, and
normally closed means for relieving response to pressure differentials, excess pressure in said lubrication system to the exterior and excess exterior pressure into said lubrication system.

3,847,235
ROLLING TYPE EXCAVATING TOOL
Robert D. Goodfellow, Bedford, Pa., assignor to Kennametal Inc., Latrobe, Pa.
Filed Oct. 10, 1973, Ser. No. 405,091
Int. Cl. F16c *19/14;* **E21b** *9/08;* **E21c** *13/01*
U.S. Cl. 175—372 **16 Claims**



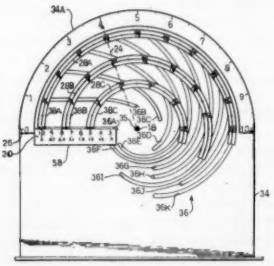
1. In a rolling excavating tool; a support member, a spindle having one end fixed to said support member and projecting angularly therefrom, a cutter body having a blind hole formed therein into which said spindle extends, a first antifriction bearing having an inner race on said spindle adjacent said one end thereof and an outer race in the adjacent end of said blind hole, means stationary with said body abutting said outer race on the end facing away from said support member and means stationary with said spindle abutting the inner race on the end facing said support member, a second antifriction bearing having an inner race on said spindle near the free end thereof and an outer race in said blind hole near the bottom thereof, means stationary on the body abutting the end of the outer race of said second bearing which faces said support member, and a nut threaded on the free end of said spindle and disposed in the bottom of said blind hole and abutting the end of the inner race of said second bearing which faces away from said support member.

3,847,236
DRILL BIT
John P. Coalson, 10502 Valley Forge No. 183, Houston, Tex. 77042
Filed June 28, 1973, Ser. No. 374,522
Int. Cl. E21b *9/10*
U.S. Cl. 175—383 **7 Claims**



1. A drill bit comprising:
a housing adapted to be connected to a drill string,
a bit carriage mounted in said housing and having conical drill bits mounted on opposite sides thereof,
means for moving said carriage out of said housing, and
means for rotating said carriage relative to said housing whereby the conical drill bits on either side of said carriage may be exposed for drilling.

3,847,237
COMPUTING MECHANISM
It Bau Huang, No. 199 Chung Shan Rd., Tainan/Taiwan
Filed Oct. 25, 1973, Ser. No. 409,627
Int. Cl. G01g *23/22*
U.S. Cl. 177—25 **5 Claims**



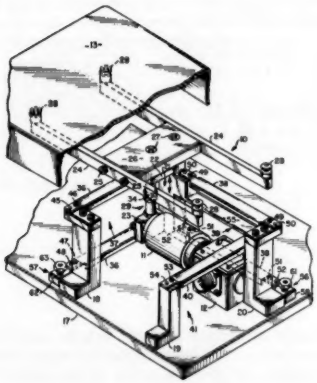
1. A computing mechanism for performing multiplication operations comprising,

pointer means rotatably mounted about an axis of rotation,
a curvilinear multiplicand scale having a center of curvature at the axis of rotation of the pointer means along which scale the pointer is movable,
a radially movable product scale having a center of curvature at the axis of rotation, and
means for radially moving the radially movable product scale in accordance with a selected multiplier,
the product of the multiplicand indicated on the curvilinear multiplicand scale by the pointer means and the selected multiplier being indicated by the pointer means on the radially movable product scale,
a linear multiplier scale extending radially from the axis of rotation and along which said radially movable product scale is movable to the selected multiplier,
a weighing mechanism attached to the pointer for rotation of the pointer in an amount dependent upon the weight of an object being weighed,
said curvilinear multiplicand scale having graduations in units of weight,
said linear multiplier scale having graduations in units of price per unit weight, and
said radially movable product scale having graduations in units of price.

3,847,238
WEIGHING SCALE WITH RESTRICTIVE VERTICAL MOVEMENT

Donivan L. Hall, and Walter E. Kupper, both of Toledo, Ohio, assignors to Reliance Electric Company, Toledo, Ohio

Filed Oct. 18, 1973, Ser. No. 407,659
Int. Cl. G01g *21/24*
U.S. Cl. 177—255 **10 Claims**

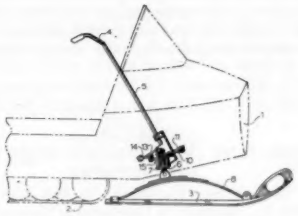


1. A weighing scale comprising, in combination, stationary frame means, movable load receiving means having six possible degrees of freedom in space, transducer means for producing weight signals in accordance with force applied to the load receiving means, and check link means connecting the frame and load receiving means for movement of the load receiving means in a substantially vertical path, the check link means consisting of five check links so arranged that five of said six possible degrees of freedom of the load receiving means are constrained leaving the sixth degree of freedom for use in force measurement.

3,847,239
STEERING MECHANISM FOR SELF-PROPELLED VEHICLES

Claud L. Copeland, 13868 Knox, Warren, Mich. 48089

Filed May 8, 1972, Ser. No. 250,950
Int. Cl. B62m *27/02*
U.S. Cl. 180—5 R **9 Claims**

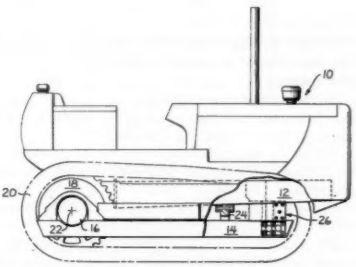


1. In a self-propelled vehicle, a body, a support for the body, means for mounting the support on the body so that it may be turned to steer the vehicle and moved rectilinearly crosswise of the vehicle, and means for turning the support to steer the vehicle in one direction and moving the support bodily in the other direction crosswise of the vehicle when it is turned in the first direction.

3,847,240
FORK AND BLADE GUIDE ASSEMBLY

Stephen G. Shoup, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 25, 1972, Ser. No. 283,726
Int. Cl. B62d *55/08*
U.S. Cl. 180—9.5 **7 Claims**



1. In a vehicle having a main frame, a pair of longitudinal roller frames, each pivotally attached at the rear portion thereof relative to the main frame about a transverse pivotal axis, whereby the forward portion of each roller frame may travel in an arcuate path upon such pivoting about said pivotal axis, means associated with the forward portion of each roller frame comprising: a fork member comprising first and second spaced plates fixed relative to one of the main frame and roller frame and disposed generally perpendicular to the pivotal axis of the roller frame; a third plate fixed relative to the other of the vehicle frame or roller frame, disposed generally perpendicular to the pivotal axis of the roller frame and between the first and second plates, the fork member and third plate moving relative to each other upon pivoting of the roller relative to the main frame; the third plate being normally closely spaced from each of the first and second plates under normal vehicle operation, the third plate contacting one of the first and second plates upon relatively great lateral loading of the

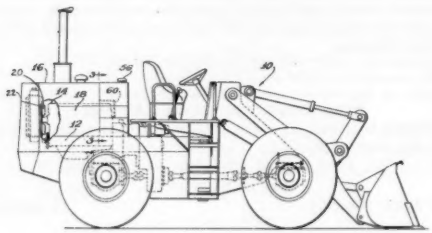
roller frame to transfer such lateral load to the main frame; and first and second complementary arcuate surfaces associated with the fork member and third plate respectively, with the radii thereof taken substantially at the pivotal axis of the roller frame, such arcuate surfaces normally closely spaced from each other under normal vehicle operation, such arcuate surfaces allowing such pivoting of the roller frame relative to the main frame, and in contact with each other upon relatively great rearward longitudinal loading of the roller frame to transfer such rearward longitudinal load to the main frame, and wherein the fork member further comprises a spacer plate disposed between the first and second plates to provide the spacing thereof, and the first and second complementary arcuate surfaces are defined by the spacer plate and third plate.

3,847,241

FUEL TANK AND HYDRAULIC RESERVOIR ARRANGEMENT

Thomas M. Cameron, Waukegan, Ill., and John L. Kellogg, Radcliff, Ky., assignors to International Harvester, Chicago, Ill.

Filed May 17, 1973, Ser. No. 361,105
Int. Cl. B60k *15/02*
U.S. Cl. 180—54 R **8 Claims**



1. A compact arrangement for mounting the fuel tank and hydraulic reservoir on a vehicle comprising:
a vehicle frame;
an engine mounted on said frame;
shroud means partially surrounding the engine and forming a semi-enclosed engine compartment;
a fan driven by the engine and capable of creating a pressure differential between the compartment and ambient pressures;
means mounting said fuel tank and said hydraulic reservoir on said frame adjacent said shroud means;
said tank and reservoir having facing side members;
said members being spaced apart to form an open channel;
one end of said channel communicating with the interior of said compartment and the other end of said channel being exposed to ambient atmosphere; whereby flow of air through the channel is created by said pressure differential to minimize the transfer of heat between said reservoir and said tank.

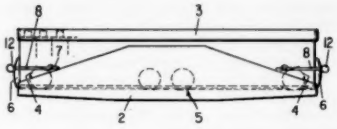
3,847,242

APPARATUS FOR ANCHORING AN EXCHANGEABLE BATTERY BOX IN THE CARRIAGE OF A BATTERY DRIVEN VEHICLE

Freidhelm Kappei, Am Pfingstanger 9, 3163 Sehnde, Germany

Filed Jan. 2, 1973, Ser. No. 320,199
Claims priority, application Germany, Jan. 5, 1972, 7200321[U]
Int. Cl. B60k *1/04*
U.S. Cl. 180—68.5 **2 Claims**

1. Apparatus for anchoring an exchangeable battery box in guiding means provided therefor in a carriage of a battery driven vehicle, said apparatus comprising a plurality of hand-levers each pivotally mounted at one end thereof on one of the carriage and an end portion of the guiding means for the battery box, and a plurality of corresponding abutments each mounted on the other of the carriage and an end portion of the guiding means for the battery box and provided with a raised wedge-like surface, each of the hand-levers carrying at the



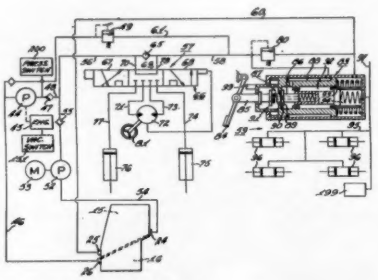
other end thereof a guiding latch or roller for engaging the raised wedge-like surface of the corresponding abutment and being spring loaded for urging that guiding latch or roller into engagement with that raised wedge-like surface, all of the hand-levers being mounted with sufficient lateral clearance that they can be pivoted out of the path of movement of the battery box when it is being exchanged.

3,847,243

AUXILIARY POWER SYSTEM ON A VEHICLE

John W. Barth, Topeka, Kans., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Oct. 27, 1972, Ser. No. 301,655
Int. Cl. B62d *5/06*
U.S. Cl. 180—79.2 R **15 Claims**



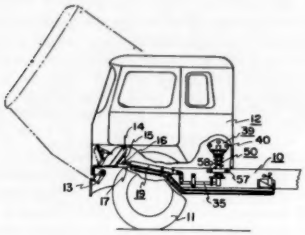
1. A hydraulic system for use on a vehicle comprising a main source of pressurized fluid adapted for being driven by the vehicle engine, an auxiliary source of pressurized fluid, valve means connected between said main source of pressurized fluid and said auxiliary source of pressurized fluid for transmitting pressurized fluid from the source of highest pressure through said system, an electrical circuit including a source of electrical energy, an electric motor driving said auxiliary source of pressurized fluid, an automatically operated switch means including, means connected to said engine normally biasing said automatically operated switch means to an open position when said engine is operating, a manually operated switch means including a brake switch connected in series with said automatically operated switch means, starting means for starting said electric motor to operate said auxiliary source of pressurized fluid when said switch means are closed to thereby provide an auxiliary source of pressurized fluid for maintaining operation of said hydraulic system.

3,847,244

LOCK APPARATUS FOR HOISTABLE VEHICLE STRUCTURES

John B. Fairbanks, Jr., 3927 S. 3030 East, Salt Lake City, Utah 84117

Filed Aug. 17, 1973, Ser. No. 389,348
Int. Cl. B62d 39/00
U.S. Cl. 180—89 A 8 Claims



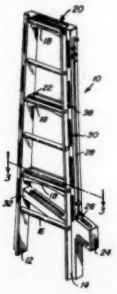
1. In combination, first primary structure having a first locking structure; second primary structure having a second locking structure releasably lockable with said first locking structure, one of said first primary structure and said second primary structure having a reaction member; and lost-motion linkage and hoist means operably connected between said first primary structure and said second primary structure, at said second locking structure, for selectively unlocking said first and second locking structures and lifting said first primary structure relative to said second primary structure, and subsequently for effecting the lowering of said first primary structure and re-locking said first and second locking structures, said lost-motion linkage and hoist means including connection structure provided with a lost-motion slot slideably receiving and reaction member, including pressure cylinder means, and being mechanically coupled to said second locking structure whereby to move the latter to lock and unlock positions relative to said first locking structure.

3,847,245

LADDER FOR PICKING FRUIT OR THE LIKE

Irvin Gulley, Sr., 13629 120th Ln., Largo, Fla. 33540

Filed Mar. 27, 1973, Ser. No. 345,296
Int. Cl. B65g 11/00
U.S. Cl. 182—49 8 Claims



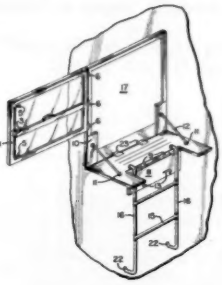
1. A ladder structure for picking tree fruit, or the like, such structure comprising a pair of spaced longitudinal support members, and a plurality of longitudinally spaced fruit-receiving trough members each attached to and extending transversely between said pair of support members, at least one of said support members being of generally tubular construction defining a fruit-handling passageway, each of said trough members communicating with said fruit-handling passageway for the delivery of fruits thereto, both of said pair of longitudinal support members being of generally tubular construction defining a pair of fruit-handling passageways, the opposite transverse ends of each of said trough members communicating with said fruit-handling passageways, respectively, for convenient delivery of fruits thereto.

3,847,246

EMERGENCY FIRE EXIT MEANS

Philip Michael Banner, 28 Oxford Rd., Massapequa, N.Y. 11758

Continuation-in-part of Ser. No. 137,244, April 26, 1971, Pat. No. 3,692,145. This application Aug. 29, 1972, Ser. No. 284,630
Int. Cl. E06c 9/14
U.S. Cl. 182—78 13 Claims



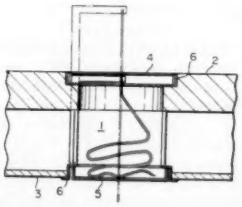
1. A emergency fire exit means comprising in combination a window and fire escape means including a frame, a movable sill, a platform pivotally mounted on said frame, a ladder mounted on said platform, a means for releasing said ladder, a movable trap door mounted in said platform so that when said platform is rotated 90° to an open position said trap door moves 180° and the ladder is released, said emergency fire exit means having signal and emergency safety means.

3,847,247

INDOOR ESCAPE DEVICE

Hiromitsu Naka, No. 39, Oaza Shinmachi, Yashio-shi, Saitama-ken, Japan

Division of Ser. No. 124,304, March 15, 1971. This application Aug. 15, 1973, Ser. No. 388,445
Int. Cl. A62b 1/20
U.S. Cl. 182—81 7 Claims



1. An escape system to be positioned between the floor of one story of a building and the ceiling of a story below the firstmentioned story, said system comprising:

an escape means including a first frame means adapted to be positioned at one end of a hole formed between a slab of the floor of said one story and the slab of the ceiling of said story below said firstmentioned story, and a second frame means adapted to be positioned at the other end of said hole;

a shell means extending between said first and said second frame means forming an escape passage for an evacuee; a cover member positioned over at least one of said frames for closing the hole when the system is not in use; an escape device device secured adjacent said escape means, said escape device comprising an adjustable guide rod means; and

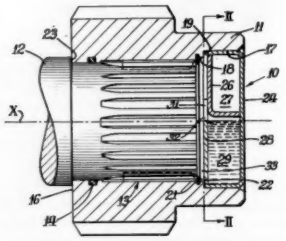
an escape unit connected to one end of said guide rod, said escape unit being adapted to extend through at least part of said shell means when said cover member is open for use by the evacuee in passing through said escape means.

3,847,248

REPLACEABLE LUBRICATING CARTRIDGE FOR SPLINE CONNECTIONS

Bennett W. Avery, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 23, 1973, Ser. No. 390,877
Int. Cl. F16n *1/00, 9/02*
U.S. Cl. 184—1 R **7 Claims**



1. In combination with a mechanism having an annular member attached to a shaft by a spline connection, the improvement comprising a replaceable lubricating cartridge attached at an inboard side therof to an outboard end of said mechanism, said cartridge comprising a housing defining a chamber therein, partition means disposed in said chamber to divide it into a closed first chamber portion and a second chamber portion adapted to be at least partially filled with a liquid lubricant, and means defining an opening through said partition means on an inboard side of said housing exposing said second chamber portion to said spline connection for communicating lubricant adapted to be retained in said second chamber exteriorly of said cartridge.

3,847,249

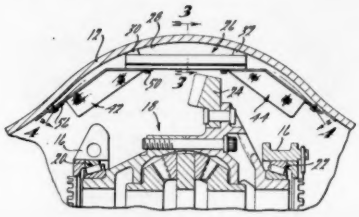
AXLE LUBRICATION SYSTEM

Leo George Oehring, Wyandotte, Mich., assignor to North American Rockwell Corporation, Pittsburgh, Pa.

Filed Aug. 24, 1972, Ser. No. 283,583
Int. Cl. F16n *7/26*
U.S. Cl. 184—6.12 **7 Claims**

1. In combination in an automotive wheel axle assembly having an axle housing, a differential carrier mounted on said housing, a differential mechanism rotatably mounted on said carrier by spaced bearings, and a ring gear secured to the exterior of said differential mechanism and by which said differential mechanism is driven, said housing and said carrier providing an oil sump in the lower portion of said axle assembly in which said ring gear is immersed and a dome over said ring gear against which oil is centrifugally thrown from said ring gear as said differential mechanism is driven, the improvement comprising:

a. an open top lubricant receptacle suspended in said housing above said ring gear and beneath said dome to collect lubricant thrown from said ring gear and dripping from said dome said receptacle comprising an elongated trough extending longitudinally of said axle housing,



b. said receptacle having at each end of said trough outlets through which collected lubricant can flow by gravity,

c. oil filter units interposed in the path of flow from said outlets and having their inlets disposed beneath the open ends of said trough,

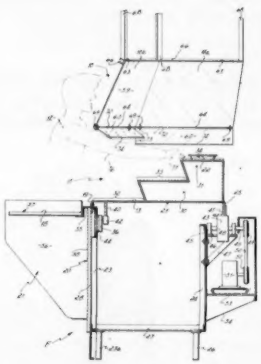
d. said oil filter units each including a cavity in which separated particles may accumulate without impairing the functioning of the filter unit.

3,847,250

SNEEZE GUARD

Frank Odell Sherrill, Charlotte, N.C., assignor to B/W Metals Company, Inc., Fairfield, Ohio

Filed June 1, 1973, Ser. No. 366,097
Int. Cl. A47f *3/08*
U.S. Cl. 186—1 R **6 Claims**



1. A sneeze guard in combination with a food service counter of the cafeteria type, said counter providing a customer service area and having a main table section with a forward edge and at least one step section rearwardly of said main table section, said sneeze guard comprising

a series of upper sections disposed side-by-side above said counter throughout the length thereof in said counter's customer service area, said sections being fixed in place and presenting an effective single section upper guard, each of said sections being disposed at an angle between about 0° and about 45° with respect to the vertical, and each of said sections having a bottom edge,

a series of lower sections hingedly connected to said upper sections along the bottom edge of said upper sections and positioned in line one with the other, said lower sections being adapted to swing freely relative one to the other, and relative to said upper sections, each of said lower sections having a bottom edge disposed above the forward edge of said counter's main table section a distance that permits an average height adult customer to withdraw a food article positioned on said main table section without touching said lower section, and each lower section being adapted to swing inwardly and away from said customer upon contact with said customer's arm as said customer reaches for a food article on said counter's step section, thereby providing an effective multi-sectioned swingable lower guard throughout the length of the counter's customer service area.

3,847,251

CONTROL APPARATUS FOR A POWERED HOIST

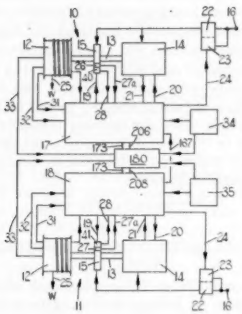
Peter John Maltby, Codsall; Stanley George Glaze, Brierley Hill; Kenneth Harold Ellis, Wolverhampton; Donald Craven, Wolverhampton, and John Michael Binns, Lichfield, all of England, assignors to Lucas Aerospace Limited, Birmingham, England

Filed Mar. 20, 1973, Ser. No. 343,047

Claims priority, application Great Britain, Mar. 21, 1972, 13213/72

Int. Cl. G05d *17/02*

U.S. Cl. 187—29 R **23 Claims**



1. A control apparatus for a powered hoist having a winch drum, a motor capable of variable output for driving the drum and a brake for the drum, said control apparatus comprising means for detecting a first torque applied by the drum to the brake when the latter is engaged to arrest the drum, control means for causing a second torque supplied by said driving motor to be increased, brake control means responsive to movement of said drum by said second torque, said brake control means for releasing said brake only when the second torque exceeds the first torque, and further control means, operative only when the brake has been released, for modifying the second torque.

3,847,252

IMPACT-ABSORBING ASSEMBLIES

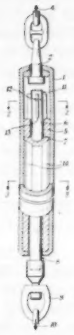
Massimo Casciola, Via Monte delle Gioie, 34, Rome, Italy

Continuation-in-part of Ser. No. 229,269, Feb. 25, 1972. This application Apr. 24, 1973, Ser. No. 354,016

Int. Cl. F16f *7/12*

U.S. Cl. 188—1 C **18 Claims**

1. In an energy-absorbing assembly, elongated deformable means and elongated deforming means coaxial with and located next to said deformable means for deforming the latter when at least one of said means is displaced with respect to the other in a given direction, along their common axis during absorbing of the energy of a shock, impact, or the like, said deforming means having a deforming portion which occupies a space previously occupied by part of said deformable means upon displacement of said one means in said given direction, displacing means operatively connected with at least said one means for displacing at least one means with respect to the other in said given direction during an energy-absorbing operation, said deformable means having an exposed surface area extending longitudinally of said deformable means and defining at least part of a free space into which said deformable



means is transversely extending during deformation of said deformable means by said deforming means, and casing means housing said elongated deformable means and having an exposed surface area directed toward said exposed surface area of said deformable means for defining said free space therewith, said casing means and deformable means directly engaging each other over an area sufficiently great to prevent movement of said casing means and deformable means one with respect to the other, during deformation of said deformable means by said deforming means, as a result of the frictional engagement between said casing means and deformable means.

3,847,253

VEHICLE BRAKING SYSTEMS

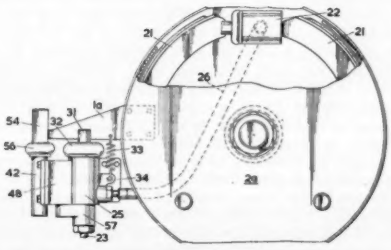
Hamilton Nigel Barnes, Sevenoaks, England, assignor to Minister of Technology in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, Millbank, London, S.W.1., England

Division of Ser. No. 71,295, Sept. 11, 1970, Pat. No. 3,735,844. This application May 25, 1973, Ser. No. 363,831

Claims priority, application Great Britain, Sept. 12, 1969, 45141/69

Int. Cl. B60t *8/00*

U.S. Cl. 188—2 A **15 Claims**



1. A fluid actuated vehicle braking system comprising a brake shoe carrier or back plate mounted for limited rotation

relative to the vehicle chassis; a balancing cylinder fixed relative to the vehicle axle housing; a piston slidable in the balancing cylinder and operatively connected to the back plate, which piston is subjected to fluid pressure during braking and thereby applies to the back plate a torque opposed to that applied thereto by the braking force in conjunction with the adhesion between an associated road wheel and the ground, which opposed torque rotates the back plate rearward with accompanying movement of the piston in the balancing cylinder when the reaction of the back plate is reduced due to loss of wheel to ground adhesion by the incidence of slip; return spring means acting upon the piston in opposition to the fluid pressure and release valve means operable upon said rearward rotation of the back plate to release fluid from the balancing cylinder and from the fluid circuit of the braking system to reduce the pressure therein and to reduce the braking force to restore adhesion between the road wheel and the ground, the reduction of pressure permitting return movement of the piston by action of the return spring to reverse the operation of the release valve means and allow reapplication of the brakes.

3,847,254

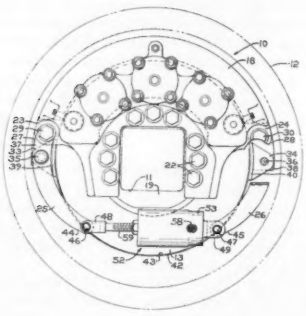
PARKING BRAKE

Richard H. Gardner, Pleasant Hill, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Apr. 2, 1973, Ser. No. 346,963

Int. Cl. F16d *63/00*

U.S. Cl. 188—70 R **6 Claims**



1. A parking brake for a caliper brake assembly having a nonrotatable brake head assembly, a rotatable brake disc with an outer circular edge and said brake head assembly extending over said outer circular edge in one sector of the brake assembly, comprising a clamping arm pivotally mounted on and extending away from said brake head assembly, a friction member mounted on said clamping arm and movable with said arm into and out of braking engagement with said outer circular edge of said brake disc in a second sector of the brake assembly, mechanical means connected to said clamping arm for generating a braking force to bias said friction member into braking engagement with said outer circular edge of said brake disc, power means connected to said clamping arm for generating a brake releasing force greater than said braking force of said mechanical means to bias said friction member out of engagement with said outer circular edge of said disc whereby said parking brake is applied by said mechanical means when said power means is released and said parking brake is released when said power means is actuated.

3,847,255

BRIDGE CONNECTOR FOR PHASE CONDUCTOR OF CURRENT COLLECTING SYSTEM

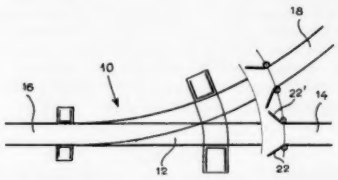
Daniel Laurent, 3 Quai Claude Bernard, Grenoble, and Jean Izoard, 8, Bld. Belledonne, St. Egreve, both of France

Filed Mar. 2, 1973, Ser. No. 337,765

Claims priority, application France, Mar. 15, 1972, 72.9746

Int. Cl. B60m *1/18*

U.S. Cl. 191—38 **6 Claims**



1. Bridge connector means to provide a continuous contact surface for a sliding current collector between the confronting spaced apart end portions of a pair of aligned power supply rails of conducting material having conformably shaped collector-engaging contact surfaces, comprising a bridge rod of conducting material having a collector-engaging contact surface shaped in conformity with the contact surfaces of said rails and adapted to form a through contact surface for said collector in the operative position of said bridge rod, pivot means to pivotally connect one end of said bridge rod to one of said end portions, locking means cooperating with the other of said end portions to position and latch said bridge rod in the operative position thereof, and control means to control the pivoting movement of said bridge rod between the operative and the non-operative positions thereof, said control means comprising linkage means connected to said locking means in such a manner as to cause the latching of said bridge rod after the positioning in the operative position thereof and the unlatching of said bridge rod before the movement thereof towards the inoperative position.

3,847,256

CURRENT COLLECTING SHOE FOR SUSPENSION TYPE VEHICLE

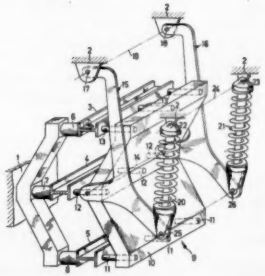
Rudolf Zurek, and Dieter Modersohn, both of Munich, Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munich, Germany

Filed July 20, 1973, Ser. No. 381,038

Claims priority, application Germany, July 20, 1972, 2235723

Int. Cl. B60l *5/38, 5/08*

U.S. Cl. 191—49 **12 Claims**



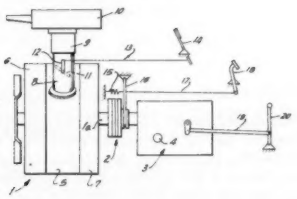
1. A current-pickup system for a track having at least one rail and a vehicle displaceable along said track, said arrangement comprising:

a contact carrier juxtaposed with said rail and provided with at least one contact engaging same from one side;
a lever pivotally mounted on said vehicle and engaging said carrier; and
a spring pivotally connected to said vehicle and to said lever and positioned to urge said carrier toward said rail with a substantially constant force within a range of angular displacement of said lever, said spring being a compression spring and being pivoted to said vehicle at a location spaced from the pivot of said lever and said vehicle whereby an imaginary line between the spring pivots to said vehicle and said lever intersects a circle centered on the middle of a line joining the pivots of said spring and said lever to said vehicle externally of the triangle formed between the pivots of said lever and said spring to said vehicle and the pivot connecting said spring to the lever.

3,847,257
IGNITION SYSTEM FOR ROTARY PISTON COMBUSTION ENGINES OF TROCHOID TYPE

Johannes Steinwart, Schillerstrasse 8, Bad Friedrichshall II, and Karl Feierabend, Ringstrasse 10, Bad Rappenau-Treschklingen, both of Germany

Filed Mar. 9, 1973, Ser. No. 339,963
Claims priority, application Germany, Mar. 10, 1972, 2211517; Nov. 18, 1972, 2256734
Int. Cl. F16d *67/06*; F02p *5/04*
U.S. Cl. 192—.062 **14 Claims**



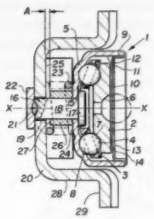
1. An ignition system for a rotary piston internal combustion engine of trochoid type to propel a motor vehicle having a transmission, clutch and a shift gear, and an intake line incorporating a throttle, the ignition system being electrically coupled to at least one spark plug, a high-voltage generator and an interruptor comprising a cam and two contacts arranged in series and being alternately actuated by the cam, three switches connected in series of which the first is closed when the throttle is closed, the second is closed when the transmission is in gear, and the third is closed when the clutch is engaged, means for coupling said first, second and third switch to said throttle, transmission and clutch, respectively, whereby one of said contacts is short circuited when all three switches are closed.

3,847,258
CLUTCH RELEASE MECHANISM

Otto Matyschik, Nudlingen, Germany, assignor to SKF Industrial Trading and Development Company B.V., Amsterdam, Netherlands

Filed May 4, 1973, Ser. No. 357,263
Claims priority, application Germany, May 9, 1972, 174664
Int. Cl. F16d *23/00*, *11/08*; F16c *19/00*
U.S. Cl. 192—98 **6 Claims**

1. A clutch release mechanism comprising a housing and a bearing assembly, said bearing assembly comprises a nonrotatable race member adapted to be connected to the operating element of the clutch, and a second race member and a plurality of rolling elements located therebetween, a retaining bolt connecting said second race member and said housing, said bolt being fixed with respect to said second race member and extending through a bore in said housing, a coil spring surrounding said bolt and normally urging said second race member and housing apart, and a bushing coaxially arranged with said spring and said bolt to limit the spring travel between said

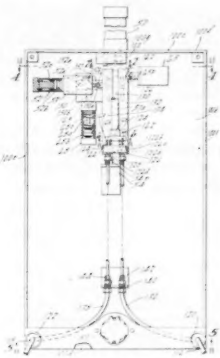


second race member and said housing on depression of said spring.

3,847,259
SAFETY MECHANISM FOR SPECIAL MACHINES AND FIXTURES

Robert W. Williamson, 77 Cedar Acres, Brunswick, Ga. 31520

Filed Apr. 16, 1973, Ser. No. 351,516
Int. Cl. F16p *3/18*
U.S. Cl. 192—131 R **76 Claims**



1. A hand restraint safety apparatus for use by an operator of a machine having at least one machine element which moves during each machine operating cycle, said apparatus comprising hand restraint means for the hands of the machine operator, hand restraint moving means operatively coupled with said hand restraint means for controlling the movement of said hand restraint means between a released position which permits at least one of the operator's hands to be disposed in the path of travel of said at least one machine element and a restraining position which prevents both of the operator's hands from being disposed in the path of travel of said at least one machine element and control means for interlocking the machine with said hand restraint moving means comprising means for permitting a machine operating cycle to begin only when said hand restraint means is in the restraining position.

3,847,260
CONVEYER BELT ROLLER

Arthur G. Fowler, 15628 Cordary Ave., Lawndale, Calif. 90260

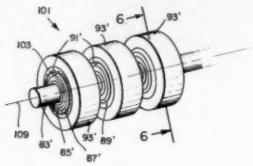
Continuation-in-part of Ser. No. 202,930, Nov. 29, 1971, abandoned. This application July 9, 1973, Ser. No. 377,736
Int. Cl. B65g *39/04*
U.S. Cl. 193—37 **4 Claims**

1. An endless conveyer belt roller, comprising:
an elongated roller shaft having supportable shaft ends;

end bearings mounted on said roller shaft adjacent said shaft ends;

an elongated metallic tube mounted on said end bearings to rotate about the longitudinal axis of said roller shaft;

a relatively thick cylinder of solid ceramic material with an inner cylindrical surface and an endless belt-supporting



glazed outer cylindrical surface disposed coaxially about said roller shaft; and

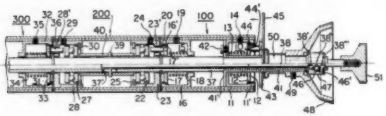
mounting means including a resilient sleeve with a pressure deformable ribbed inner surface press fit between said tube and said inner cylindrical surface of said cylinder of solid ceramic material for absorbing shock energy exerted on said cylinder of solid ceramic material.

3,847,261

PLATEN MECHANISM IN WHICH ANGULAR POSITION OF EACH OF A PLURALITY OF PLATEN MEMBERS DISPOSED COAXIALLY MAY BE ADJUSTED INDEPENDENTLY OF OTHERS

Koh Matsuhisa, Ninomiyamachi, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1972, Ser. No. 306,877
Claims priority, application Japan, Nov. 17, 1971, 46-92214
Int. Cl. B41j *15/18*
U.S. Cl. 197—129 **4 Claims**



1. A platen mechanism in which the angular position of each of a plurality of platen members coaxially disposed may be adjusted independently of the other of said platen members, said platen mechanism comprising

a. a plurality of platen members disposed coaxially,

b. clutches for individually engaging and disengaging each of said plurality of platen members with each other platen member adjacent thereto, each of said clutches comprising

i. a stationary member disposed at one end of one of said plurality of platen members and

ii. a movable member disposed at one end of the platen member adjacent to said one platen member in opposed relation with said one end of said one platen member for slidable movement, said movable member being normally spring-biased into engagement with said stationary member but movable away from said stationary member against said spring bias thereby disengaging said clutch,

c. a hollow shaft extending through said plurality of platen members and said clutches coaxially thereof,

d. a plunger slidably fitted into said hollow shaft, and

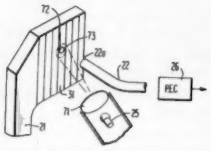
e. slidable means, connecting to said plunger and slidable over said hollow shaft in response to the shift of said plunger, for causing said clutches to engage or disengage, said slidable means including a pin for connecting said slidable means to said plunger, and said hollow shaft having an axially elongated slot through which said pin extends.

3,847,262

APPARATUS AND ATTACHMENT FOR DERIVING CODED SIGNALS

Leonard James Higgins, Schenectady, N.Y., assignor to Datacq Systems Corporation, Latham, N.Y.

Filed Mar. 14, 1969, Ser. No. 815,247
Int. Cl. B41j *19/00*
U.S. Cl. 197—1 R **55 Claims**



41. An attachment for a conventional typewriter comprising an elongated spacing member designed to be secured to and movable with a conventional typewriter carriage, said spacing member having a line of characteristic alternate light reflecting and non-reflecting marks extending along its length with the marks having a pitch equal to one space of the typewriter.

43. An electro-optical typewriter attachment designed to be secured to a conventional typewriter of the kind having a plurality of key-actuated typeheads that are selectively physically moved to a common printing position during operation, the attachment being secured adjacent the common printing position and comprising a single source of illumination, a light transmitting optical system for directing light from said single source of illumination onto serially arrayed characteristic coded reflecting and non-reflecting patterns formed on respective key-actuated typeheads, a unitary fibre optic bundle including a light receiving branch path for serially receiving light reflected over a single optical path from coded patterns formed on respective key-actuated typeheads and illuminated by the light transmitting optical system, and a single photosensitive element having the light output from the light receiving branch path of the fibre optic bundle directed thereon for converting the intelligence contained in received alternate pulses of reflected light into serially coded electrical signals which are characteristic of the individual characters and markings represented by the keys of the typewriter.

3,847,263

ENGLISH KEYBOARD SCHEME

X, Box 1598, Kingston, Ontario, Canada

Filed Mar. 7, 1973, Ser. No. 338,922
Int. Cl. B41j *5/10*
U.S. Cl. 197—100 **2 Claims**

1. A keyboard scheme for use on typewriters or other typographical equipment which has the character keys for letters arranged in a home row, an upper row and a lower row such

that the letter keys are adjacent to each other in the following successive and fixed order whether it is from left to right or from right to left: on the home row as follows, O, A, E, I, U, H, N, T, R, and S; on the upper row as follows, P, Y, M, L, D, C, and F such that P is located over the corresponding position

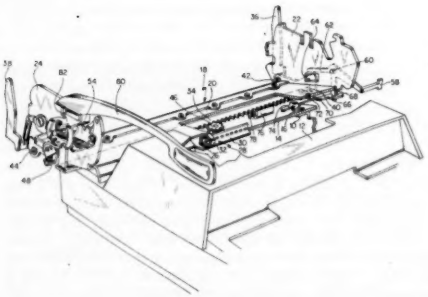
of I on the home row and that F is located over the corresponding position of S on the home row; and, on the lower row as follows, X, Q, K, J, V, B, G, W, and Z such that X is located below the corresponding position of A on the home row and that Z is located below the corresponding position of S on the home row.

3,847,264

COLLAPSIBLE LINE SPACE LEVER MECHANISM

James E. Harmon, Gorton, and Aaron C. Zeamer, Cortland, both of N.Y., assignors to SCM Corporation, New York, N.Y.

Filed Mar. 12, 1973, Ser. No. 340,643
Int. Cl. B41j *19/76*
U.S. Cl. 197—114 R **19 Claims**



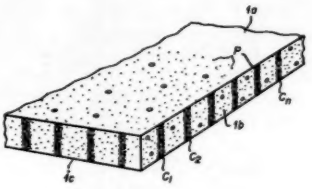
1. An improved mechanism for a typewriter having a carriage, an escapement between the carriage and the rest of the typewriter, means for releasing the carriage from the escapement, and a line space lever on the carriage, wherein the improvement comprises means for collapsing the line space lever, means for detaining the line space lever in operating position, and connecting means connected between the carriage release means and the line-space-lever detaining means for releasing the detaining means so that the line space lever can collapse when the carriage release means is actuated to release the carriage from the escapement.

3,847,265

INK RIBBON HAVING AN ANISOTROPIC ELECTRIC CONDUCTIVITY

Jacques Ehretsmann, Conches/Geneve; Emile Barbey, Geneve, and Paul Heinzer, Zurich, all of Switzerland, assignors to Battelle Memorial Institute, Carouge/Geneva, Switzerland

Filed Apr. 25, 1973, Ser. No. 354,181
Claims priority, application Switzerland, Apr. 26, 1972, 6235/72
Int. Cl. B41j *31/02*
U.S. Cl. 197—172 **6 Claims**



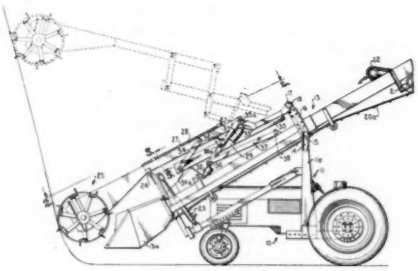
1. An ink ribbon having an anisotropic electric conductivity in the direction of the thickness of the ribbon, characterized in that said ribbon is formed of a resin containing a plurality of chains of electrically conductive particles extending through the ribbon in the direction of said thickness.

3,847,266

ENSILAGE LOADER WITH AUTOMATICALLY POSITIONED CUTTER REEL

Delbert L. Cox, Garden City, Kans., assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Apr. 5, 1973, Ser. No. 348,243
Int. Cl. B65g *65/06*
U.S. Cl. 198—9 **2 Claims**



1. In apparatus for removing ensilage from a stack of ensilage, the combination with a conveyor having a receiver adjacent and near the bottom of the stack and a pivotal main boom movable to different elevations above the conveyor, of

an extension boom associated with and forming an extension of said main boom,

an ensilage cutter mounted at the outer end of said extension boom, and

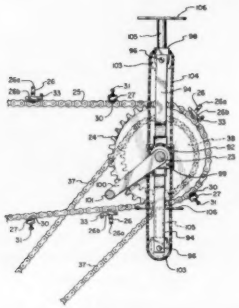
link means interconnecting said extension boom and said main boom for interrelated relative movement therebetween, said link means effecting movement of said extension boom relative to said main boom to vary the radial distance of said cutter from the main boom pivot axis in response to pivotal movement of said main boom.

3,847,267

PICKUP MECHANISM

Dan H. Patten, Jr., 4020 E. Washington St., Phoenix, Ariz. 85034

Division of Ser. No. 245,794, April 20, 1972. This application Apr. 5, 1973, Ser. No. 348,038
Int. Cl. B65g 47/00
U.S. Cl. 198—20 R 1 Claim



1. A pickup mechanism for use in roof tile fabricating machines and the like comprising

spaced continuous conveyor means across which items are positioned to be transported;

support means at opposite sides of the conveyor means;

a horizontally disposed axle journaled through said support means;

means for turning said axle;

a hub centrally secured on said axle;

a pair of oppositely extending U-shaped brackets having their webs connected to said hub;

a stub shaft carried by the ends of each said bracket;

a support rotatably mounted on each said stub shaft;

a sprocket means connected to each said support;

a pair of sprockets journaled on said axle;

a chain trained over each sprocket means on a bearing support and one of said sprockets journaled on the axle; and

adjustable means for rotating said sprockets journaled on the axle and for fixing their rotational positions with respect to the support means, said adjustable means comprising

an arm fixed to each sprocket journaled on the axle and extending to the adjacent support means,

arcuate opening means in each said support means, and

bolt means extending through said arcuate opening means and threaded into the arm extending thereto to fix the arm to the support means.

3,847,268

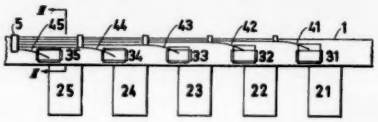
IDENTIFICATION DEVICE ON A CONVEYOR BAND

Norman Leroy Duell, Fulton, N.Y., assignor to Societe D'Assistance Technique Pour Products Nestle S.A., Lausanne, Switzerland

Filed June 11, 1973, Ser. No. 368,640
Int. Cl. B65g 43/00
U.S. Cl. 198—40 2 Claims

1. Apparatus for identifying the station origin of a box having lateral and transverse closure flaps delivered with at least its lateral flaps in an open position onto a traveling conveyor from one of a series of delivery stations, said apparatus including: cm

a corresponding series of parallel rails disposed above and extending longitudinally of said conveyor, said rails further being spaced laterally of said conveyor, the rails being of staggered lengths to have each end associated with a predetermined station, the said end of each rail being curved to define a terminus thereof substantially opposite its respective associated station whereby a lateral flap of a box entering said conveyor from the associated station is caused to engage the correspondingly associated rail to be held between it and an adjacent rail, and



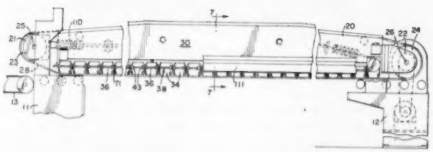
a corresponding series of swithces disposed downstream of said stations and each having switch actuating means extending between the rail associated therewith and a rail adjacent thereto whereby a box flap held between said associated rail and rail adjacent thereto will operate said switch actuating means during the travel of said box on said conveyor.

3,847,269

MAGNETIC RAIL TYPE CONVEYOR UNIT

Dario Buccicone, Gary, Ind., assignor to Bucciconi Engineering Co., Inc., Gary, Ind.

Filed Sept. 4, 1973, Ser. No. 393,780
Int. Cl. B65g 17/46
U.S. Cl. 198—41 25 Claims



1. A conveyor for metal sheets which comprises an elongate frame having an endless traveling belt member supported on rotatable members mounted at opposite ends of said frame, a plurality of longitudinally spaced magnet assemblies mounted for vertical movement on said frame above the lower run of said belt member, said magnet assemblies including magnets which are operable to exert a magnetic force on a sheet and to hold the same in engagement with the lower surface of said belt member for travel with said belt member, and means extending lengthwise of said frame and connected to said magnet assemblies for suspending said magnet assemblies on said frame, which means is in the form of a cable having a degree of flexibility so as to permit limited movement of said magnet assemblies relative to each other.

3,847,270

MATERIAL DIGGING AND TRANSPORTING APPARATUS

Aubrey C. Briggs, Carnegie, Pa., assignor to Dravo Corporation, Pittsburgh, Pa.

Division of Ser. No. 188,863, Oct. 13, 1971, Pat. No. 3,756,375. This application Jan. 4, 1973, Ser. No. 320,862
Int. Cl. B65g 17/12
U.S. Cl. 198—140 7 Claims

1. A material digging and transporting apparatus for use with bulk material handling apparatus, comprising:

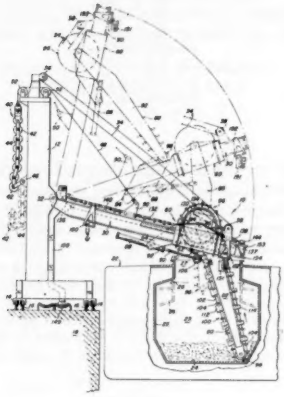
an elongated rigid bucket elevator ladder frame having an upper mounting structure for attachment to another support member with said ladder frame extending in a generally downward direction from said support member;

upper and lower sprockets rotatably supported by said ladder frame, said upper sprocket having a larger diameter than the lower sprocket;

drive means for rotating said upper sprocket;

endless chain means forming a closed loop around said sprockets and including spaced buckets being shaped and arranged on said chain means to scoop material as they are adanced past said lower sprocket and to discharge material as they are advanced past the upper sprocket;

guide means carried by the elongated frame for providing positive guidance for the endless chain means both on the inside and the outside of the loop thereof for a substantial



distance along the elongated frame to define ascending and descending runs of said endless chain means between said upper and lower sprockets;

idler wheel means engaging said endless chain means on an unsupported portion of one run between said guide means and the upper sprocket for guiding the path of said endless chain therebetween; and

support means connected to the ladder frame and on which said idler wheel means is rotatably mounted, said support means being adjustable to selectively position said idler wheel means along a path substantially transverse to said one run of said endless chain means for adjusting the slack therein to the extent that the endless chain means may be selectively loosened to permit the buckets carried thereby to drag along the material between the lower end of the guide means on the descending run and the lower sprocket.

3,847,271

SANDER WITH IMPROVED FEED MECHANISM

Donnell H. Culley, Jr., P.O. Box 1581, Morristown, Tenn. 37814

Filed Aug. 9, 1973, Ser. No. 387,142
Int. Cl. B65g *19/00*; **B24b** *47/20*
U.S. Cl. 198—168 **4 Claims**

1. For use in feeding work pieces to a planer or the like comprising,

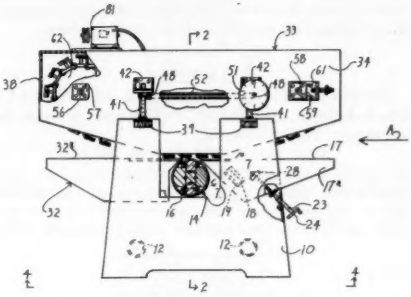
a. a pair of spaced apart parallel chains supported for travel in unison,

b. a plurality of transverse members each comprising a pair of parallel portions carried by the chains and spanning the space between them,

c. a plurality of work piece engaging and feeding assemblies carried by each transverse member, each said assembly comprising:

1. a member having an enlarged foot-like work piece engaging end,

2. one of said pair of parallel portions of the transverse members being spaced further from the foot-like work engaging piece end than the other,



3. rod-like members slidably passing through said portions of the transverse member,

4. said work piece members being carried on the ends of the rod-like members,

5. a compression spring surrounding the rod-like members and effective to bias the work piece members toward the work piece, and

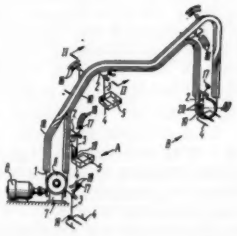
6. pads of friction material on the foot-like work piece engaging end of said work piece members disposed to contact the work piece.

3,847,272

CONVEYOR FOR FORWARDING EITHER BATCHES OR PILES OF NEWSPAPERS

Nikolai Ivanovich Anikanov, Bolshaya Bronnaya ulitsa, 2/6, kv. 6; Leonid Pavlovich Grachev, ulitsa Serafimovicha, 2, kv. 181, both of Moscow; Grigory Iosifovich Zax, ulitsa Mechnikova, 14a, kv. 24, Kiev; Grigory Avramovich Radutsky, 16 Parkovaya ulitsa, 49, korpus 2, kv. 68, Moscow, and Rafail Efimovich Kheifets, Brest-Litovsky prospekt, 162, kv. 30, Kiev, all of U.S.S.R.

Filed Oct. 23, 1973, Ser. No. 408,433
Claims priority, application U.S.S.R., Apr. 13, 1973, 1899751
Int. Cl. B65g *17/20*
U.S. Cl. 198—177 R **5 Claims**



1. A conveyor for forwarding piles of printed signatures such as newspapers, including a closed three-dimensional chain adapted to be advanced; means for effecting advancing of said chain; a plurality of substantially horizontal spindles

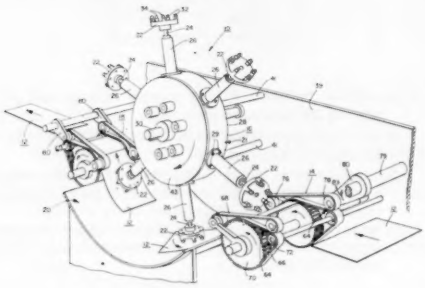
uniformly spaced along said chain and carried thereby; a respective plurality of rods mounted on said spindles in a cantilever fashion, platforms for supporting said piles of printed signatures mounted on said rods; a first half-coupling fixed to each said spindle at the area of mounting thereon of the respective one of said rods; a second half-coupling freely rotatable about each said spindle and fixed to the respective one of said rods, said half-couplings being maintained in permanent resilient engagement to retain said respective platforms together with said piles carried thereby against rocking motion, as said chain is being advanced; and means urging said half-couplings into permanent resilient engagement.

3,847,273

TURNING DEVICE FOR FLEXIBLE WEB PRODUCT

Eric S. Buhayar, Swarthmore, Pa., assignor to Scott Paper Company, Philadelphia, Pa.

Filed Apr. 2, 1973, Ser. No. 346,934
Int. Cl. B65g *47/24*
U.S. Cl. 198—236 **10 Claims**



1. An apparatus for turning a moving discrete flexible web product within its own plane, said apparatus including, in seriatim, an inlet conveyor, a turning section and an outlet conveyor, the improvement in which the turning section includes:

a. a concave, substantially cylindrical support surface for supporting a face of said web product received from said inlet conveyor;

b. a turning head having web-product engaging means, said turning head being mounted for movement along a path concentric with, and closely spaced to said substantially cylindrical support surface to confine at least a portion of the web product between the web-product engaging means of the turning head and said support surface and to move said web product over said support surface; and

c. actuating means for rotating said turning head through a predetermined number of degrees about an axis substantially perpendicular to said web product as said turning head moves along said concentric path, whereby said web product is rotated through a predetermined arc within its own plane for delivery to said outlet conveyor.

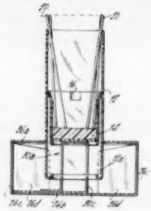
3,847,274

CAPILLARY TUBE DISPENSING VIAL AND STAND

Sumter R. Inglish, Stamford, Conn., and Walter John May, Queens Village, N.Y., assignors to Propper Manufacturing Co. Inc., Long Island, New York, N.Y.

Continuation-in-part of Ser. No. 135,916, April 21, 1971, abandoned. This application Sept. 21, 1972, Ser. No. 290,990
Int. Cl. B65d *5/50, 5/52, 85/20*
U.S. Cl. 206—44 R **1 Claim**

1. In combination, a vial for storing and dispensing capillary tubes comprising an open-end housing with its height greater than twice its diameter and having upper and lower ends, a cup having a cross-section substantially conforming to the cross-section of said housing and being received within said housing for sliding movement therein, the height of said cup being less than one-half the height of said housing, a stop at the lower end of said housing preventing said cup from passing through said lower end, a top closure for said vial adapted to overlay the upper end of said housing, sections of resilient material in the base of said cup and on the underside of said top closure, the spacing between said sections of resilient material when said vial is closed being slightly less than the length of said capillary tubes so that said tubes tightly engage said resilient material when said vial is closed preventing axial



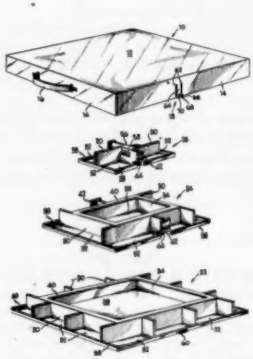
and lateral movement of said tubes and reducing breakage during handling, and a stand for said vial, said stand including a support ledge for engaging the lower portion of said housing and for supporting said vial in a substantially upright position and an upstanding projection mounted on said stand adjacent said ledge, said projection being received within the lower end of said housing and passing through said lower end of said housing to engage the lower end of said cup, said cup when in position on said projection being elevated by a height sufficient to cause the upper ends of said tubes to flare radially outwardly, separating individual tubes for easy removal.

3,847,275

TOY AUTOMOBILE CARRYING CASE

Howard J. Morrison, Deerfield, and Donald F. Nix, Hanover Park, both of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed July 2, 1973, Ser. No. 375,791
Int. Cl. B65d *11/10, 1/36, 25/04*
U.S. Cl. 206—45 **8 Claims**



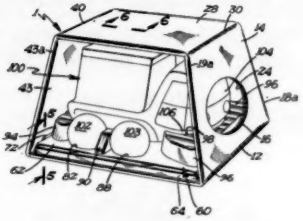
1. A collapsible, compartmented toy-receiving structure, comprising: a plurality of generally planar bases stacked one on top of the other, the size of said bases being progressively smaller from bottom to top, each of said bases including a plurality of upstanding walls in turn defining a plurality of individual toy-receiving compartments, each compartment

having an open upper boundary and at least one open side boundary adjacent the periphery of the associated base, all of said bases save for the uppermost base including an upwardly open nesting compartment generally larger than any of said individual toy-receiving compartments and sized to snugly but slidably receive the immediately uppermost and adjacent base; and releasable means whereby each base may be locked at substantially the upper extremity of the nesting compartment on the immediately lowermost base; whereby said structure may be collapsed by manipulation of releasable means to cause each of said bases to nest and may be expanded and held in place whereby toys received in any of said toy-receiving compartments on any of said bases have their tops and at least one side fully exposed to be viewed.

3,847,276
DISPLAY CONTAINER FOR TOYS

Alphonse C. Lehner, Minneapolis, and Paul E. Boeye, Mound, both of Minn., assignors to Liberity Carton Co., Minneapolis, Minn.

Filed Oct. 2, 1972, Ser. No. 294,314
Int. Cl. B65d *5/04, 5/50, 25/10*
U.S. Cl. 206—45.14 **6 Claims**



1. A display container comprising:
an elongated, generally rectangular base tray having a top, article receiving surface with retaining means preformed thereon integrally therewith for direct engagement with an article to be housed within the container on top of said base tray;
an elongated fiberboard member having two, normally free, opposite ends wrapped around said tray to a generally rectangular shape to provide a housing open on two sides having a bottom wall underlying and coextensive with said article receiving surface of said base tray and a top wall spaced apart from said bottom wall to accommodate an article therebetween;
a pair of opposed end walls of said fiberboard housing extending between said top and bottom walls in secure restraining engagement with the opposite ends of said tray, and said end walls being hingedly connected to said top wall along fold lines; and
retaining means holding said elongated fiberboard member in said generally rectangular housing shape.

3,847,277
DOLLAR SIGN BANK

Sharon Chilcote Doner, B16 Garden House Apts., 472 E. College Ave., State College, Pa. 16801

Filed Nov. 30, 1972, Ser. No. 310,675
Int. Cl. A44c *21/00*; **B65d** *3/24*
U.S. Cl. 206—.84 **4 Claims**

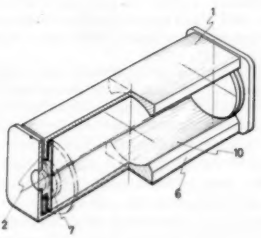
1. A free-standing coin bank comprising first and second tubes having open tops and closed bottoms, and a curved strip having a plurality of apertures therein adjustably holding said first and second tubes upright in parallel-spaced relation with the respective lower ends thereof protruding through the lowermost portion of the curved strip, the curved strip being in the shape of an S, the tubes being spaced in the plane of the S with the tops thereof protruding upward through the upper

portion of the S, the overall form comprising a dollar sign, the bottom of the curved strip being effectively flat in transverse section with the lowermost portion thereof position in substantially coplanar relation with the lower ends of the tubes.

3,847,278
CASE-LIKE PURSE

Ildefonso Carrascosa Valles, Botanico Cavanilles 8-7°, Valencia, Spain

Filed Jan. 9, 1973, Ser. No. 322,145
Claims priority, application Spain, Feb. 2, 1972, 176826
Int. Cl. B65d *3/00, 85/58*; **A45c** *1/00*
U.S. Cl. 206—0.82 **1 Claim**



1. A case-like coin purse comprising:
a first elongated piece having opposite substantially disc-shaped ends, each of said ends having perforations therethrough;
a second elongated piece having substantially square-shaped opposite ends, each of said ends having orifices therethrough;
a pair of rollers, one each being fixedly connected to said ends of said second piece at said orifices therein;
each of said rollers and the opposed surface of the respective end of said second piece forming therebetween a circular space;
said first piece being rotatably mounted by said perforations in said ends thereof about said rollers with one of said ends of said first piece being slidable in each of said circular spaces;
the inner surface of each of said first and second pieces being in the form of a longitudinally extending concave recess having a lateral cross-sectional shape corresponding to a 90° arc of a circle having a diameter at least equal to that of the coins to be stored in said purse;
said second piece having a flat outer surface forming a base for said purse;
said first piece being movable with respect to said second piece from a first coin retaining position wherein said recesses oppose each other, to a second coin releasing

position wherein said recesses are adjacent and form a continuous semi-cylindrical cavity, there being longitudinal windows between the edges of said pieces when said first piece is in said first position; and

the exterior shape of said purse when said first piece is in said first position being substantially that of a rectangular parallelepiped with square-shaped opposite ends.

3,847,279

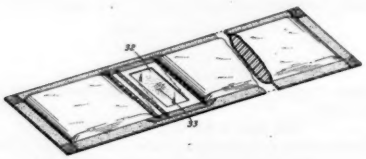
PACKAGE FOR PLURAL REACTABLE COMPONENTS WITH RUPTURABLE ULTRASONIC SEAL

William Herbert Montgomery, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 878,423, Nov. 20, 1969, Pat. No. 3,749,620. This application Mar. 21, 1973, Ser. No. 343,573

Int. Cl. B65d *81/32*

U.S. Cl. 206—219 **1 Claim**



1. A plural compartment mixing package fabricated of a flexible laminate, at least the inner layer of which is thermoplastic, and which seals to itself on heating and at least one stronger adjacent layer which has a higher melting point,

fabricated into a plurality of separate compartments,

a fluent material in at least one of said compartments and a second material in another compartment, said fluent material and said second material being mixable at a time of use, but being non-compatible on storage,

said laminate being strongly heat-sealed around the periphery of the compartments, and being separably sealed between said compartments wherein:

a. the separable seal consists of at least three separate ultrasonic seals, forming security compartments between these separate seals which tend to prevent and to show any compromise of security of the ultrasonic seals, between flat undisturbed portions of the laminate, with later formed heat seals overlapping the ends of said ultrasonic seals and in leaktight juxtaposition thereto;

b. at least part of the laminate forming one such security compartment being transparent, and

c. a highly colored soluble dye in said one security compartment having said transparent part, whereby it leakage into such compartment occurs, the dye is dissolved, and becomes readily visible.

3,847,280

STERILE PACKAGE FOR CLINICAL THERMOMETERS AND THE LIKE AND METHOD OF MAKING IT

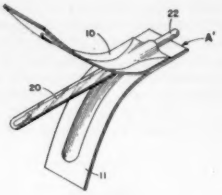
George W. Poncy, Chatham, N.J., assignor to Johnson & Johnson, New Brunswick, N.J.

Continuation of Ser. No. 77,917, Oct. 5, 1970, Pat. No. 3,732,975, which is a continuation-in-part of Ser. No. 736,218, June 11, 1968, Pat. No. 3,552,558. This application Aug. 31, 1972, Ser. No. 285,255The portion of the term of this patent subsequent to Jan. 5, 1988, has been disclaimed.

Int. Cl. A61b *19/02*

U.S. Cl. 206—306 **5 Claims**

1. A sheath-package for surgical instruments and the like comprising superposed laminations of material formed into two separate layers, the inner layer of each lamination forming a sheath for the reception of an instrument, said sheath having an open end and a closed end, the outer portions of each lamination comprising a cover for said sheath, said lamina-



tions being joined together by a seal defining said sheath, said seal between said laminations being constructed so that said outer portions are strippable from said sheath along said seal upon the insertion of an instrument into said sheath.

3,847,281

PACKAGE FOR AMPOULES

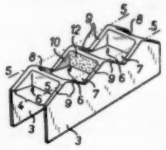
Ernst Vogeli, Hermetschloostrasse 75, CH-8048 Zurich, Switzerland

Filed July 10, 1972, Ser. No. 269,944

Claims priority, application Switzerland, July 8, 1971, 10083/71

Int. Cl. B65d *5/48*

U.S. Cl. 206—437 **8 Claims**



1. A unitary cardboard packing container for receiving small objects, comprising two parallel spaced apart side walls, a middle portion joining said two side walls, said middle portion having a plurality of hollow, V-shaped ribs opening towards the space between said side walls and extending transversely between said side walls, a plurality of substantially hexagonal apertures of the same shape and size between adjacent ribs for receiving objects to be packed, the region of said side walls adjacent said ribs having edges with a zig-zag configuration, and connecting portions for joining said ribs to said zig-zag edges, said connecting portions having substantially a triangular shape and being connected by bending edges to said ribs and to said side walls, said side walls, ribs and connecting portions being formed of a single piece of sheet material.

3,847,282

DISPLAY CARTON

Peter C. Collura, Los Altos, Calif., and Michael Allen Kipp, Glen Ridge, N.J., assignors to Container Corporation of America, Chicago, Ill.

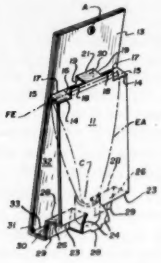
Filed Jan. 2, 1973, Ser. No. 320,474

Int. Cl. B65d *75/08, 5/08*

U.S. Cl. 206—491 **1 Claim**

1. An open end display carton for an elongated article of merchandise such as a collapsible tube or the like having a closure end and an opposite flattened end, said carton being formed from a cut and scored blank of paperboard or the like comprising:

a. a generally rectangular base panel;
b. a first end structure foldably connected at one end of said base panel for supporting an end of said tube;
c. a second end structure foldably connected at the other end of said base panel for supporting the opposite end of said tube;
d. both of said structures having laterally spaced abutments defined by spaced substantially parallel fold lines to said



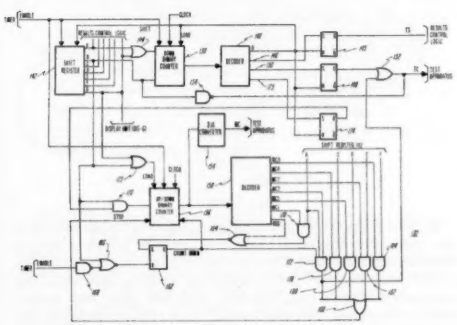
fold line for having spaced cut lines substantially perpendicular thereto support of the ends of said tube;
e. a first closing panel foldably connected to said first end structure;
f. a second closing panel foldably connected to said second end structure;
g. said second closing panel extending over said base panel in spaced relationship thereto and being secured to said first closing panel.

3,847,283

REED SWITCH ANALYZER

Howard J. Squires, 105 Ellingwood Dr., Rochester, N.Y. 14618, and Donald C. Rimlinger, RD 1, Pond Rd., Holcomb, N.Y. 14469

Filed June 4, 1973, Ser. No. 366,938
Int. Cl. B07c *5/00*
U.S. Cl. 209—74 M **14 Claims**



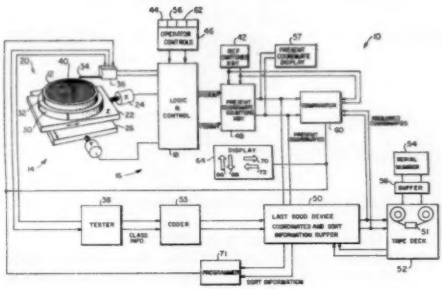
1. A reed switch analyzer to be used in combination with an indexing-type multi-head reed switch machine for testing the characteristics of reed switches against predetermined standards, wherein each reed switch is produced by a particular machine head, comprising:
a test head having pairs of oppositely placed support notches along a horizontal surface thereof, each notch pair defining a station for receiving a reed switch and transport means for simultaneously lifting any reed switches positioned therein from their respective stations and moving them into the next succeeding test stations respectively in synchronism with the indexing of the reed switch machine;
means for loading reed switches into a first station of the test head, one at a time, from the reed switch machine;
test means associated with said test head for performing a different test on the reed switches at different stations;
identification circuit means responsive to signals from said test means for identifying good and bad switches, a good switch being defined as one which has met all test standards and a bad switch being one which has failed to meet at least one test standard, and
discharge means responsive to signals from said identification circuit means for separating the good switches from the bad during unloading, the test means being arranged to perform a concentricity test at one of said stations by pneumatically moving two plungers having aligned cavities in their faces toward one another against the leads of the reed switch in the station, the leads of a good switch being encompassed by both the cavities thereby permitting sufficient travel of both plungers to actuate respective microswitches thereof for providing a signal indicating concentricity.

3,847,284

MAGNETIC TAPE DIE SORTING SYSTEM

Mordechai Wiesler, Lexington, and Samuel Havdala, Woburn, both of Mass., assignors to Teledyne, Inc., Hawthorne, Calif.

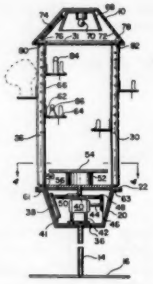
Filed May 11, 1973, Ser. No. 359,305
Int. Cl. B07c *5/344*
U.S. Cl. 209—81 R **17 Claims**



1. A method of sorting semiconductor devices from a wafer of said devices, said method comprising the steps of:
a. marking said wafer with reference indicia describing a preselected arbitrary reference coordinate position;
b. mounting said wafer on probe and test means having test probe means and means for recording coded signals on a recording stratum;
c. registering said test probe means and said reference indicia;
d. generating a coded signal defining said preselected reference coordinate position as an arbitrary reference coordinate position for said reference indicia;
e. recording said arbitrary reference coordinate position coded signal on said recording stratum;
f. probing and testing said wafer by registering said test probe means and selected ones of said devices;
g. generating coded data signals defining the absolute coordinate position of said selected ones of said devices relative to said arbitrary reference coordinate position for said reference indicia and the characteristics of said devices at said absolute coordinate position;
h. recording said coded data signals for said selected ones of said devices on said recording stratum;

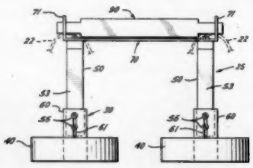
i. transferring said wafer and recording stratum to transfer means having device removing means and means for reading said recording stratum;
j. registering said device removing means and said reference indicia;
k. synchronizing the position of said device removing means and said reference indicia relative to the position of said test probe means and said reference indicia as defined by said arbitrary reference coordinate position;
l. reading said recorded coded data signals and selectively registering said device removing means and selected ones of said devices having preselected characteristics at selected absolute coordinate positions as defined by said recorded data signals; and
m. removing selected ones of said devices from said wafer according to said recorded coded data signals.

3,847,285
ILLUMINATED DISPLAY STAND FOR WIGS AND COSMETICS
Bernard Leprince, 5921 Onandaga Rd., Bethesda, Md. 20014
Filed July 31, 1973, Ser. No. 384,335
Int. Cl. A47f *5/25*
U.S. Cl. 211—1.5 **13 Claims**



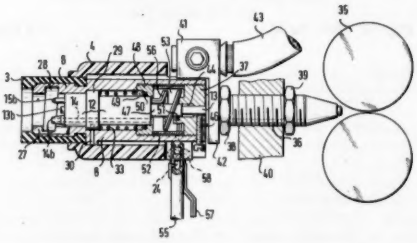
1. An illuminated display stand comprising:
a. a base;
b. drive means supported in said base;
c. a plurality of perforated and vertically extending display rods individually rotatable about their vertical axes while being journaled in said base, said display rods including drive elements engaging said drive means and
d. hook means engaging with the perforations in said display rods and extending laterally thereof as a display support.

3,847,286
HOLDER FOR GASOLINE LANTERN
Billy R. Garrett, Fort Worth, Tex. 76134
Filed Jan. 28, 1974, Ser. No. 436,934
Int. Cl. F16m *13/00*
U.S. Cl. 211—13 **2 Claims**



1. In a device for displaying a pair of lighted gasoline lanterns arranged in side by side, spaced apart relation to each other from a small pleasure boat, usually powered by an outboard engine, having gunwales of hollow construction characterized by a broad top surface and having inner and outer wall surfaces extending downwardly from the top surface, the combination of a pair of individual holders, each of which in use supports one lantern, each including a cylindrical receptacle, comparatively short relative to its diameter, which in use is disposed vertically and has the bottom of a lantern received bodily therein, and an elongated metal strip, characterized by its inherent spring tension but soft and easily bent, which is bent substantially 180 degrees intermediate its ends and in use has portions thereof in overlying engagement with the top surface and the adjacent inner and outer wall surfaces of a gunwale, in yieldable, frictional engagement therewith, the last mentioned portion extending downwardly a substantial distance below the top surface and having means removably and adjustably connecting it to the receptacle, to support the receptacle on the gunwale at a predetermined distance below the top thereof, the individual holders of the pair having connecting means, rigidly and removably connected to middle portions of the respective strips and adjustable longitudinally relative thereto, connecting the holders in side by side, spaced apart relation to each other, and detent means integral with the connecting means and coacting therewith for engagement by the bails or handles of a pair of lanterns each having its bottom in place in one of the receptacles.

3,847,287
SINGLE-POLE ELECTRICAL PLUG CONNECTION FOR SHIELDED ARC WELDING APPARATUS
Wilhelm Dinse, Konigsreihe 12, 2000 Hamburg 70, Germany
Continuation-in-part of Ser. No. 277,086, Aug. 1, 1972, abandoned, Continuation-in-part of Ser. No. 277,087, Aug. 1, 1972, abandoned. This application June 1, 1973, Ser. No. 366,183
Claims priority, application Germany, June 3, 1972, 7220830; June 3, 1972, 7220918
Int. Cl. B23k *9/00*
U.S. Cl. 219—130 **11 Claims**



1. A single-pole electrical plug connection for mounting in the base of a mounting plate and through which a fusible endless electrode wire from a feed mechanism, and auxiliary utilities, are supplied for shielded arc welding apparatus, the connection comprising coaxially disposed plug and socket bodies assembled and interlocked by a relative endwise displacement and rotational movement, the plug and socket bodies having interfitting means permitting relative rotation between the plug body and the socket body and about a longitudinally extending axis and said interfitting means drawing said bodies tightly together by reason of such rotation, said plug and socket connection having a pair of guide tubes for the fusible endless electrode wire and arranged centrally in said bodies with connector means for releasably joining the tubes together, an endwise displaceable and rotatable insulated insert in the socket body and having the guide tube of the socket body affixed therein, a spring urging the insulated insert and guide tube toward the plug body to maintain said

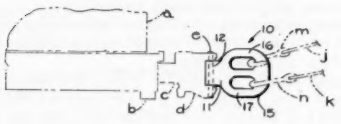
connector means together, additional connector means in the plug body and in the insulated insert through which auxiliary utilities are supplied, the socket body having an adapter pin secured therein, said pin having a longitudinal wire-carrying bore therethrough in alignment with said guide tubes and also having means for attachment to such a mounting plate and electrode wire feed mechanism.

3,847,288

WINCH LINE HITCH MEMBER FOR DERAILED CARS AND METHOD OF USING SAME

Glenn L. Hulcher, Virden, Ill., assignor to M. L. Hulcher Company, Virden, Ill.

Filed Apr. 18, 1973, Ser. No. 352,253
Int. Cl. B61g *3/00*
U.S. Cl. 213—111 **3 Claims**



1. For pivotal mounting to the knuckle pin of a derailed railroad car coupler in place of the knuckle normally provided in the forward part of such coupler,

a winch line attachment fixture comprising

a rigid metal hitch member having at its aft end

a lug portion rounded about a vertical axis and whose depth substantially equals the depth provided within such coupler for hinging such knuckle,

a vertical bore through said lug portion along said axis, the bore having a diameter sufficient to receive such knuckle pin, and

a winch attachment portion projecting forwardly from said lug portion, whereby to clear the forward part of such coupler,

said winch attachment portion having, adjacent to said lug portion, a vertical substantially planar portion whose depth is at least equal to the depth of the lug portion and projects forwardly to means to which a plurality of winch lines may be secured to extend divergingly forward,

whereby, as winching forces are applied in varying intensities, to pivotally maintain said planar portion in continuous alignment with the resultant of the horizontal components of winch line forces, thereby to cause said planar portion to resist the vertical resultant thereof in the manner of a cantilever beam.

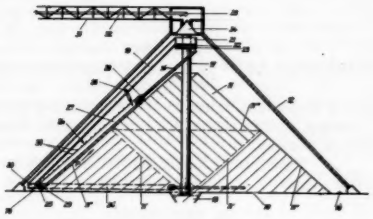
3,847,289

DEVICE FOR THE REMOVAL OF BULK MATERIAL FROM ROUND, CONE-SHAPED PILES

Gerhard Fischer, Dortmund-Kirchhorde, Germany, assignor to Gustav Schade Maschinenfabrik, Dortmund, Germany

Filed June 22, 1973, Ser. No. 372,480
Claims priority, application Germany, June 26, 1972, 2231268
Int. Cl. B65g *65/28*
U.S. Cl. 214—10 **13 Claims**

1. A device for the removal of bulk material from an annular pile through an opening in a support surface beneath the pile and generally in the center thereof comprising, inclined scraper means having lower and upper ends, means supporting said scraper means for rotation about the outer circumferential surface of said pile, said supporting means including center guide means supported above said opening and having an axis generally in alignment with the axis of said opening, circular guide means surrounding said pile on said support surface and generally concentric with the axis of said opening, beam means having a lower end supported by and movable along said circular guide means and an upper end engaged with said center guide means for rotation about the axis thereof, said scraper means including means to engage and



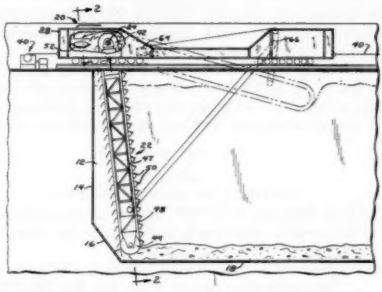
displace material in the pile upwardly in the direction from said lower end toward said upper end of said scraper means, means supporting said lower end of said scraper means for pivotal movement of said scraper means in a vertical plane relative to said support surface, and means to pivot said scraper means in said vertical plane.

3,847,290

BULK SHIP UNLOADER

Matthieu Suykens, Belleville, Ontario, Canada, assignor to Borg-Warner (Canada) Ltd., Oakville, Ontario, Canada

Continuation of Ser. No. 217,344, Jan. 12, 1972, abandoned. This application Sept. 26, 1973, Ser. No. 400,988
Int. Cl. B65g *63/00*
U.S. Cl. 214—15 E **1 Claim**



1. Ship mounted apparatus for unloading or reclaiming bulk materials from the hold thereof comprising:

a trolley frame having wheels;

tracks on said ship longitudinally and above said hold for receiving and guiding the wheels of said trolley frame;

means for moving said trolley frame longitudinally of said ship on said tracks;

said trolley frame being greater in length and width than in height above said hold;

a plurality of side-by-side bucket elevator means extending substantially the width of the hold and each comprising a plurality of buckets mounted on a movable means supported on a rigid frame;

each rigid frame being of a width less than its length and the height of said trolley frame and pivotable at one end within said trolley frame between a substantially horizontal position totally within said trolley frame and a vertical position in the hold closely adjacent the bottom thereof;

means to pivot said rigid frames from one position to the other position;

a transverse extending cross conveyor belt in said trolley frame and movable therewith positioned to receive material from said buckets and to convey said material to the side of said trolley frame, and

a longitudinal conveyor belt supported by said ship to receive material from said transverse conveyor belt to convey material from said hold.

3,847,291

WORKPIECE GRIPPER HAVING VIBRATING MEANS THEREON

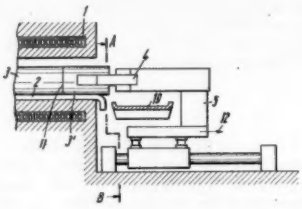
Gerhard Seulen, and Friedrich Scheffler, both of Remscheid, Germany, assignors to AEG-Elotherm GmbH, Remscheid-Hasten, Germany

Filed Jan. 16, 1973, Ser. No. 324,145

Claims priority, application Germany, Mar. 18, 1972, 2213249

Int. Cl. F27b *9/38*

U.S. Cl. 214—27 **10 Claims**



1. In a pusher furnace for inductively heating workpieces to their hot forming temperature before they are ejected at predetermined intervals at the furnace exit, the improvement comprising means for ejecting the fully heated workpieces at the furnace exit including ejecting elements mounted on a holder and adapted to grip the flanks of the workpiece and to withdraw the same in the direction of workpiece advance, said holder being supported so that it can move in a direction normal to the direction of workpiece advance, and a vibrator being coupled to said holder said vibrator preventing fusing of the gripped workpiece with one immediately therebehind.

3,847,292

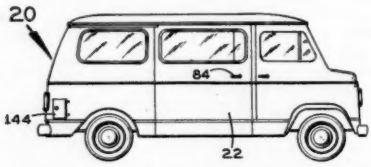
AUTOMATIC LIFT APPARATUS

Claude E. Williams, 2224 N.W. 6th Ter., Fort Lauderdale, Fla. 33311, and F. Alan Gates, 1109 Orange Isle, Fort Lauderdale, Fla. 33115

Continuation of Ser. No. 260,906, June 8, 1972, abandoned. This application Aug. 8, 1973, Ser. No. 386,725

Int. Cl. B60p *1/44*

U.S. Cl. 214—75 G **1 Claim**



1. In combination,

an automotive vehicle;

sliding door means for providing a closure for one side of said vehicle and slidable between an open and closed position;

a door latch;

power-operated means for latching said door closed and unlatching said door, a first switch on the outside of the vehicle for selectively actuating said last-mentioned power operated means to latch the door, a second switch on the inside of the vehicle for selectively actuating said last-mentioned power operated means to latch or unlatch the door, said switches being independently operable;

said power operated means comprising a first reversible electric motor, a driving gear connected to said first electric motor, and a gear segment coupled to and driven by said driving gear, said gear segment operatively connected to said door latch whereby operation of the said first electric motor latches and unlatches said door;

motor operated means for sliding the unlatched door between closed and open positions, a third switch on the outside of the vehicle for selectively actuating said motor-operated means to slide the door between its closed and open positions, a fourth switch on the inside of the vehicle for selectively actuating said motor-operated means to slide the door between its closed and open positions, said switches being independently operable;

a support post having a rectangular cross-section mounted in a substantially vertical position on said vehicle adjacent said slidable door means;

a carriage slidably mounted for vertical movement on said support post, said support post providing a surface upon which said carriage rides; said carriage having four rollers which contact said surface;

a hydraulic drive means including an electric motor connected between said post and said carriage for raising and lowering said carriage;

said support post being rotatably supported with respect to said vehicle about a vertical axis;

a horizontal platform supported by said carriage;

a horizontal beam extending from said carriage;

a vertical beam connecting the outermost end of said horizontal beam to the outermost end of said platform;

a second reversible electric motor;

a first gear driven by said second electric motor;

a second gear in engagement with said first gear;

a pivoted crank connected at one end thereof to said second gear;

the other end of said pivoted crank being connected to said post for turning said post and said carriage through an angle sufficient to move said carriage into and out of said vehicle;

a fifth switch on the outside of said vehicle for selectively actuating said second reversible motor to turn said post and carriage, a second switch on the inside of said vehicle for selectively actuating said second reversible motor to turn said post and carriage, said switches being independently operable;

a seventh switch on the outside of the vehicle for selectively actuating said hydraulic drive means, an eighth switch on the inside of said vehicle for selectively actuating said hydraulic means, said switches being independently operable;

a ninth switch on said platform for selectively actuating said hydraulic drive means independently of said other switches; and

a tenth switch on said platform for selectively actuating said reversible motor independently of said other switches.

3,847,293

PNEUMATIC TRASH-GARBAGE PICKUP DEVICE

Bruce Theodore Edward Boon, Wayne, N.J., assignor to Eastern Cyclone Industries, Inc., Fairfield, N.J.

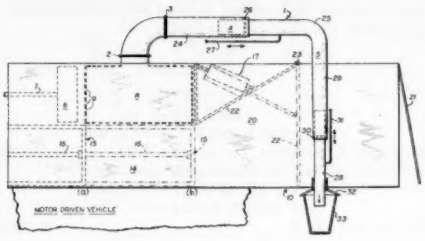
Filed Mar. 7, 1973, Ser. No. 338,967

Int. Cl. B65f *3/02*

U.S. Cl. 214—302 **7 Claims**

1. Pneumatic pickup apparatus for collecting solid waste and trash which comprises in combination a motor driven

vehicle, a body mounted on said vehicle, a pneumatic conveying conduit extending from the top of said body to solid waste positioned outside said body, a fan positioned within said body adapted to exert a vacuum pressure to move said waste to within said body through said conduit, and compaction means within said body to compact said waste, wherein said waste is positioned within a receptacle, wherein said conduit comprises a telescopic horizontal member and a telescopic vertical member, and wherein movable pressure loaded guides are attached to said vertical member by means of guide channels rigidly affixed along the outer surface of said vertical member, said guides adapted to seat rigidly over the top of said receptacle as the lower end of said vertical member moves downwardly into said receptacle.

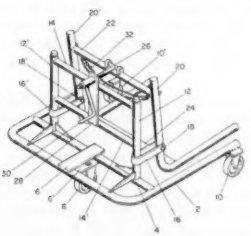


3,847,294

DUAL WHEEL REMOVER

Gordon Leroy Davenport, 1424 5th St., Greeley, Colo. 80631

Filed Mar. 9, 1973, Ser. No. 339,523
Int. Cl. B60b *29/00*
U.S. Cl. 214—332 **5 Claims**



1. A wheel and tire handling device intended for use when mounting or dismounting dual type wheel units from trucks and the like as well as for use in the transportation of such wheel units between different locations, the device comprising a base frame member of a generally U-shaped configuration having a bight portion forming a back surface thereof and having spaced apart forwardly extending leg portions adapted to straddle the lower portion of the wheels to be handled thereby in a transverse manner with respect to the plane of such wheels, a fixed caster wheel mounted to the lower surface of each front end of each leg portion to support the same on a suitable work surface, a pivot caster associated with the bight portion approximately centrally thereof and pivotable about an axis extending normal to the plane of the base frame member for use in steering the device, a pair of upright vertically extending transversely spaced apart post members, each post member associated with one of said leg portions, a transversely extending reinforcing member interconnecting the top portions of said post members, a bracket mounted on each of said post members adjacent the bottom ends thereof and extending in a direction forwardly thereof substantially parallel to the associated leg portions, a cradle comprised of a pair of generally L-shaped transversely spaced apart vertically disposed arm members each having a generally vertical segment and a generally horizontal segment and each interconnected by transversely extending upper and lower cross-piece members, said upper cross-piece member interconnecting said arms adjacent the top end portions of said vertical segments with said lower cross-piece member interconnecting said arms adjacent the point of connection of said horizontal segments to said vertical segments, said horizontal segments projecting forwardly of said base in the direction of said leg portions of said base, said vertical segments each being pivotally connected to an associated one of said brackets by a pivot bolt extending therethrough at a position substantially adjacent the point of connection to said horizontal segment thus providing for rocking pivotal movement of said cradle about said pivot bolts relative to said base frame, and screw thread adjustment means interconnecting said upper cross-piece member of said cradle to said reinforcement brace extending transversely between said upright post members and operable to selectively control the pivoting movement of said cradle whereby said horizontal segments are moved between an elevated and a lowered position for engaging and disengaging from wheels carried thereon.

3,847,295

VESSEL AND SEALING MEMBER STRUCTURES FOR SPARKLING WINES

Walter S. Taylor, Bully Hill Rd. No. 2, Hammondsport, N.Y. 14840

Filed Mar. 31, 1972, Ser. No. 240,095
Int. Cl. B65d *45/30*
U.S. Cl. 215—1 R **8 Claims**

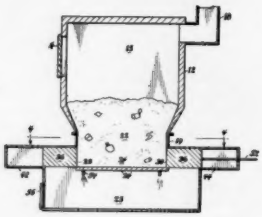
1. A bottle adapted to contain a sparkling type wine under pressure which comprises a rounded bottom portion whereby the bottle is unable to stand upright on a flat surface unassisted, the configuration of the bottle being otherwise so that it normally rests with its longitudinal axis substantially horizontal, a neck portion, a removable stopper including a first cork portion which is received in said neck portion in a state of compression whereby it is adapted to be in contact with and maintained in a moist condition by wine in said bottle when its longitudinal axis is in a substantially horizontal position, said removable stopper also including a stepped second cork portion which bears on and is snugly received in a state of compression in a recess provided around the periphery of said neck portion, a top part composed of a rigid material fixedly connected to said stopper said neck portion threaded on its outer surface, a threaded cap secured to said threaded neck portion and extending at least in part over the top part thereby retaining said cork portions in sealing engagement within said neck portion.

3,847,296

ASH REMOVAL SYSTEM

Richard F. Stockman, Friendship, N.Y., assignor to The Air Preheater Company, Inc., Wellsville, N.Y.

Filed Dec. 6, 1973, Ser. No. 422,501
Int. Cl. F23j 1/00
U.S. Cl. 110—165 R 11 Claims



1. Apparatus for the combustion of waste material therein comprising a housing that encloses an incinerator chamber superposed over an ash collection chamber, said ash collection chamber including a plane floor and side walls formed to include horizontally disposed slot means, an ash removal ram adjacent the plane floor adapted to extend laterally through said slot means, a void extending vertically through said ram, an ash disposal zone subjacent the ash collection chamber, and means for moving the ram laterally through said slot means to position the void therein intermediate the ash collection chamber and the disposal zone whereby the void in the ram will serve as a passageway for ash moving from the collection chamber to the disposal zone.

ERRATUM

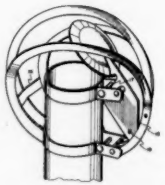
For Class 219—130 see:
Patent No. 3,847,287

3,847,297

RAIN CAP GUARD AND LOCK FOR EXHAUST PIPES

Earl E. Baader, Rt. No. 1, Nelson, Wis. 54756, and Ronald M. Schlosser, Rt. No. 2, Durand, Wis. 54736

Filed Apr. 17, 1972, Ser. No. 244,569
Int. Cl. B65d 25/00; F16l 35/00
U.S. Cl. 220—85 P 2 Claims



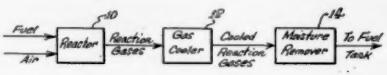
1. A combination rain cap and rain cap guard rail device for engines employing vertical exhaust pipes comprising a first and second assembly adjacent to each other to form a single operating unit, said first assembly comprising a cover, a counterbalance and a first annular bracket, said counterbalance extending perpendicularly to said cover, and having an opening therethrough, said first annular bracket joined to said cover by means of a hinge pin connected through the counterbalance whereby the cover is able to pivot, said first bracket adapted to be attached adjacent an opening of an exhaust pipe, said second assembly comprising a second annular bracket and guard rails, said second annular bracket being spaced below said first annular bracket on said exhaust pipe and having said guard rails extending upwardly from one side of said second annular bracket to encircle said first assembly and connecting at a common point on the other side of said second annular bracket, said rails having aligned holes therethrough and being so arranged that when said cover is in a closed position the opening through the counterbalance is aligned with the holes in said rails.

3,847,298

FUEL TANK INERTING SYSTEM

Mackenzie L. Hamilton, Los Angeles, Calif., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Mar. 20, 1972, Ser. No. 235,955
Int. Cl. B65d 25/00
U.S. Cl. 220—88 B 8 Claims



1. an inerting system for a fuel tank of a movable vehicle driven by a propulsion engine comprising:

a first heat exchanger having, a catalytic reactor hot side to catalytically react fuel from the tank with heated bleed air from the vehicular propulsion engine to produce oxygen-depleted reaction gases, and a ram air cooled cold side;

a second heat exchanger having a hot side to receive reaction gases from the catalytic reactor hot side of said first heat exchanger and a cold side to receive ram air from the fluid stream moving past the vehicle;

means to transfer ram air from the cold side of said second heat exchanger to the cold side of said first heat exchanger;

a third heat exchanger to receive reaction gases from said second heat exchanger, said third heat exchanger cooled by a portion of the fuel from the vehicular fuel tank;

a fourth heat exchanger having a hot side to receive reaction gases from said third heat exchanger;

a cooling turbine to receive reaction gases from the hot side of said fourth heat exchanger and to expand the reaction gases therethrough, said fourth heat exchanger having a cold side to receive the expanded reaction gases from said cooling turbine before the reaction gases are provided to the fuel tank; and

reaction gases pumping means disposed between said cooling turbine and the cold side of said fourth heat exchanger to receive and recirculate a portion of the reaction gases from the cold side of said fourth heat exchanger with the expanded reaction gases from said cooling turbine.

3,847,299

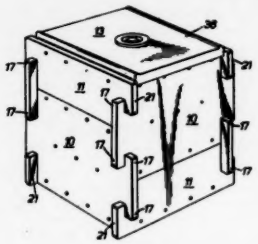
APPARATUS FOR MAKING COMPOST

Arthur Lewis John Page, "St Peter" Walton Hill, Deerhurst, Gloucester, England

Filed Oct. 13, 1972, Ser. No. 297,295
Claims priority, application Great Britain, Oct. 14, 1971, 47898/71; Apr. 19, 1972, 18142/72
Int. Cl. B65d 25/18
U.S. Cl. 220—4 F 5 Claims

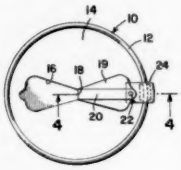
1. Composting apparatus comprising a plurality of sections which can be assembled to form a box, the sections being

thermal insulators and grooves being formed in the inner faces of the sections in communication with through holes, said box



being provided with a pair of lids, namely an inner lid which fits loosely within the side walls of the box and an outer lid which substantially closes the top of the box.

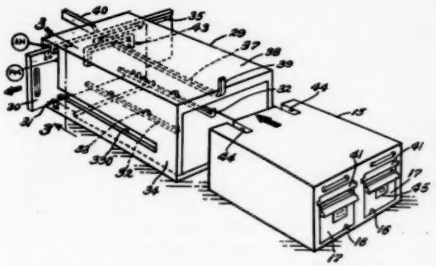
3,847,300
NON DETACHABLE PULL TOP CAN
Lyle E. Waters, Toburon, Calif., assignor to Lawrence Peska Associates, Inc., New York, N.Y.
Filed July 16, 1973, Ser. No. 379,417
Int. Cl. B65d *17/20*
U.S. Cl. 220—269 **8 Claims**



1. A container comprising a sidewall having a rim, a top section extending across said sidewall and having a scoring and a fold, a gripable means secured to said top section for rupturing said top section along said scoring and for folding the resultant ruptured section along said fold towards said rim, and means mounted on said gripable means for frictionally engaging said rim said fold extending parallel to a tangent to said rim at the point of engagement said engaging means comprising a pair of extruded projections for clamping to both sides of said rim, said projections extending parallel to said rim when said ruptured section is fully folded towards said rim whereby said ruptured section can be folded back and secured to said rim without twisting while remaining attached to said container.

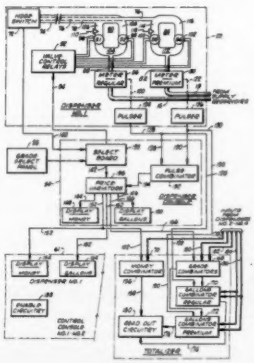
3,847,301
PROGRAMMED ARTICLE DISPENSER
Joseph Denman Shaw, 508 Church St., Brownsville, Pa. 15417
Filed Dec. 19, 1973, Ser. No. 426,339
Int. Cl. G07f *11/40*
U.S. Cl. 221—5 **3 Claims**

1. In a programmed article dispenser:
1. a cabinet containing a number of compartments,
2. a plurality of dispensing units each slidably disposed in a compartment,
3. a number of article containing chambers in each unit,
4. a bottom wall for each unit,
5. a lateral row of spaced apart coding means on the bottom wall adjacent each chamber,
6. a decoding case adapted to slidably receive the cabinet,
7. an indexed selector disposed for intermittent lateral movement within the case,
8. a plurality of fingers mounted on the selector, one to a unit,
9. a spaced series of decoding lugs on each finger, one to each lateral row of coding means,
10. axially moveable coding pins mounted in selected positions along the coding means on the bottom wall of each unit,



11. stop means on the case limiting sliding movement of the cabinet into the case and positioned to align the decoding lugs on the fingers with the coding means on the bottom wall of the unit,
12. mechanically operated means adapted to actuate the selector to axially move the decoding lugs and coding pins and condition selected units for dispensation,
13. and dispensing means operated by the mechanically operable means adapted to slide selected units out of the cabinet into positions for dispensation of articles from their respective chambers.

3,847,302
GASOLINE DISPENSING SYSTEM
Russell R. Krone, 6613 N. Prospect St., Oklahoma City, Okla. 73111; Donald R. Krone, 10505 Ridgeview Dr., Oklahoma City, Okla. 73120; George E. Buchanan, 2908 N.W. 28th St., Oklahoma City, Okla. 73107, and James F. Noyes, 5817 N.W. 72 St., Oklahoma City, Okla. 73127
Filed Sept. 20, 1972, Ser. No. 290,437
Int. Cl. B67d *5/30*
U.S. Cl. 222—14 **13 Claims**



1. A gasoline dispensing system for delivery of regular, premium, and intermediate grades of gasoline from respective regular and premium supply reservoirs, comprising:

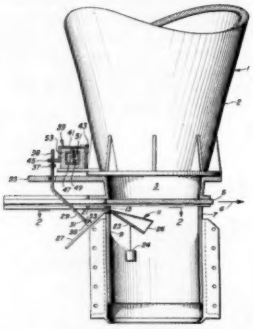
dispensing means including gasoline delivery hose;
regular metering means receiving gasoline flow from said regular supply reservoir to deliver flow to said dispensing means;
premium metering means receiving gasoline flow from said premium supply reservoir to deliver flow to said dispensing means; grade selector means providing selection ranging from regular to premium and including intermediate grades
first circuit means generating first electrical pulse output in proportion to the amount of gasoline flow through said regular metering means;
second circuit means generating second electrical pulse output in proportion to the amount of gasoline flow through said premium metering means;
pulse combinator means receiving as input each of said first and second electrical pulse outputs to provide a gallonage pulse output which is proportional to the amount of gasoline flow through said regular and premium metering means;
variator circuit means receiving said gallonage pulse output and generating a gallons output pulse and a money output pulse;
first display circuit means receiving said gallons output pulse to provide visual indication of gallons of gasoline flow; and
second display circuit means receiving said money pulse output to provide visual indication of the cost of gasoline flow through said metering means.

3,847,303

PADDLE SWITCH FOR AUTOMATIC GATE CLOSURE ON HOPPERS

Imre Szendroi, Allentown, and Jenson E. Ehret, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 29, 1972, Ser. No. 310,489
Int. Cl. F27d *3/00*
U.S. Cl. 222—66 **4 Claims**



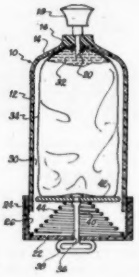
1. In a gravity operated hopper having downwardly converging walls forming a bottom discharge opening and a lower extension directly below said bottom discharge opening the combination with said gravity operated hopper of:
a. a sensing device extending within said lower extension substantially balanced pivotally about a generally horizontal axis;
b. closure means for said bottom discharge opening above said lower extension;
c. said sensing device arranged to be pivoted by material discharged through said bottom opening and to return to a substantially balanced position when said hopper is empty; and
d. switch means operable by said sensing device for closing said closure means when said sensing device is in the substantially balanced position.

3,847,304

BAG-TYPE FLUID AND PASTE DISPENSER

Milton J. Cohen, 9201 Persimmon Tree Rd., Potomac, Md. 20854

Filed Aug. 13, 1973, Ser. No. 387,704
Int. Cl. B65d *35/56*
U.S. Cl. 222—105 **10 Claims**



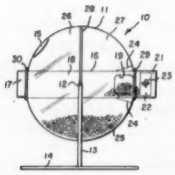
1. In a bag-type fluid and paste dispenser comprising a deformable bag and a fluid or paste material to be dispensed within said bag, a rigid housing dimensioned to enclose the filled bag therein, said housing being open at the bottom and closed at the top, a dispensing valve in the top, a hollow needle extending from the dispensing valve into the interior of the housing in position to pierce the bag when the latter is inserted therein, a bottom wall removably connected to the housing to close the open bottom end of the housing, a disc plate dimensioned for axial displacement within the housing between retracted and extended positions of adjustment, means for releasably latching the disc plate in retracted position, means constantly urging said disc plate toward the extended position and means for axial adjustment of the bottom wall in a direction toward or away from the top wall to maintain or increase the force of said urging means on said disc plate thereby to compensate for loss in force on the disc plate as material in the bag is dispensed.

3,847,305

NUT OR CANDY DISPENSER

Robert A. Tobin, 67 Lake Bluff Rd., Rochester, N.Y. 14622

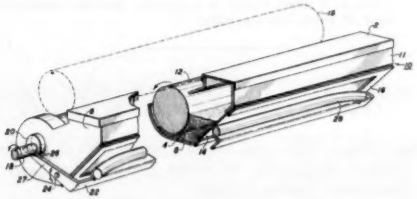
Continuation-in-part of Ser. No. 286,331, Sept. 5, 1972. This application Mar. 28, 1973, Ser. No. 345,730
Int. Cl. B65g *65/48*
U.S. Cl. 222—166 **26 Claims**



1. A nut or candy dispenser including a pivotally mounted container for holding nuts or candies and comprising:
a. a length of wire formed to support said container and shaped to have a pair of opposite upright regions spaced apart by slightly more than the width of said container;

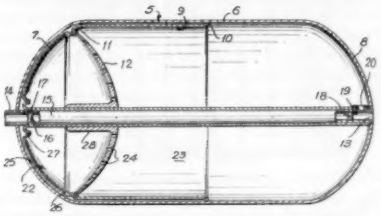
b. said upright regions of said wire having supports turned inward toward said container;
c. said container fitting between said upright regions of said wire and having means for receiving said supports for supporting said container in a normally upright position from which said container is free to pivot in either direction in a vertical plane between said supports and perpendicular to a line between said supports;
d. means for returning said container to said normally upright position from a pivoted position in either direction in said vertical plane;
e. a tube in said container extending from above the top of said container to below the lowest surface of said container supporting said nuts or candies and forming a discharge passageway;
f. means for closing the bottom of said tube to said nuts or candies;
g. means around an upper region of said tube above said top of said container and means around a lower region of said tube below said lowest surface of said container supporting said nuts or candies for interconnecting said tube and said container, at least one of said interconnecting means being removable for separating said tube from said container;
h. said lower region of said tube adjacent said lowest surface of said containter supporting said nuts or candies having a pair of diametrically opposed openings to admit said nuts or candies from said container into said lower region of said tube;
i. said lower region of said tube between said openings forming a diametrically opposed pair of scoops oriented transversely to said vertical plane between said supports so some of said nuts or candies collected between said scoops when said container is upright are scooped up and directed out of said discharge passageway by one of said scoops when said container pivots in one direction and by another one of said scoops when said container pivots in the other direction; and
j. means for controlling the amount of said nuts or candies scooped up and discharged as said container tilts.

3,847,306
DEVELOPING APPARATUS
Richard Stockton Howell, Webster, and Stuart Evan Hotchkiss, Williamson, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.
Filed May 20, 1970, Ser. No. 39,686
Int. Cl. B65g *65/70*
U.S. Cl. 222—203 **7 Claims**



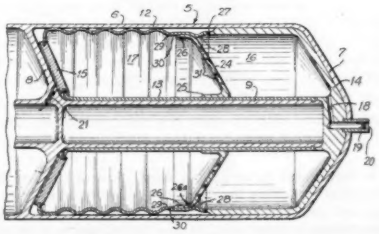
1. A developing assembly comprising:
a. a developing applicator capable of rotation about a first axis;
b. a donor member having an input shaft responsive to motive power to rotate said donor member about a second axis substantially parallel to said first axis; and,
c. a sump housing adapted to contain a quantity of marking particles mounted about said donor member, said sump housing having
1. an opening therein to permit contact between said developing applicator and said donor member,
2. an end plate having an aperture through which said input shaft passes and which permits said shaft to rotate relative to said end plate,
3. a side wall attached to said end plate and having a flexible portion, and
4. means responsive to rotation of said shaft for flexing said flexible portion.

3,847,307
POSITIVE EXPULSION DEVICE FOR FLUIDS
William S. Hosek, Mount Tabor, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 10, 1966, Ser. No. 586,008
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **5 Claims**



1. In an apparatus for positively expelling fluid from a closed vessel and of the type having a rolling diaphragm with a cylindrical wall of a relatively flexible material, a piston at one end of the diaphragm of a shape to conform to one end of the vessel and means for supplying fluid under pressure to one side of the piston, that improvement which comprises perforations in the piston so that fluid may flow therethrough, a second rolling diaphragm connected to the outer periphery of the piston of a shape to conform to the opposite end of the vessel, and means to control the rolling of the second diaphragm to engage the adjacent side of the piston and form an imperforate lining thereon so that the pressure fluid thereafter acts on the piston to move it bodily from one end of the tank to the other.

3,847,308
ROLLING DIAPHRAGM WITH LATERAL SUPPORT
Ronald Tambor, Maplewood, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.
Filed Oct. 10, 1966, Ser. No. 586,011
Int. Cl. B67d *5/54*
U.S. Cl. 222—386.5 **7 Claims**



1. Apparatus for positively expelling fluid from a tank of the type having a rolling diaphragm in said tank and comprising a sleeve of flexible material having one end attached, a piston

at its opposite end and adapted to roll back on itself to expel fluid from the tank, the combination with said tank and rolling diaphragm of a transverse strut in said tank separate from the piston and attached end of the rolling diaphragm sleeve and having a peripheral flange engaging the sleeve intermediate its ends to support it against forces tending to buckle it inwardly, and said strut being slidable along the sleeve when engaged by the piston during a rolling operation.

3,847,309

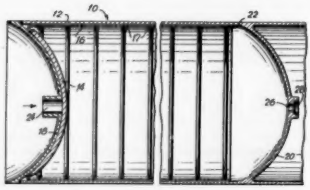
ROLLING DIAPHRAGM CONSTRUCTION

Walter B. Grossman, Fair Lawn, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Oct. 10, 1966, Ser. No. 586,599

Int. Cl. B67d *5/54*

U.S. Cl. 222—386.5 **11 Claims**



1. The combination with a liquid expulsion tank having a piston movable therein by a pressurizing medium from one end of the tank to the other to expel the liquid therefrom; of a flexible diaphragm having a continuous wall hermetically sealed at its ends to the peripheral wall of the tank and to the outer periphery of the movable piston, said diaphragm being rollable backwardly within itself by said piston upon liquid expelling movement thereof, and reinforcing means engaging said diaphragm along its length to strengthen it against buckling by the pressurizing medium acting on the piston comprising at least one transversely disposed ring engaging a periphery of said diaphragm and slidable along said diaphragm as the latter is turned inside out.

3,847,310

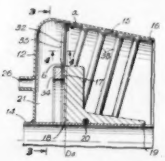
ROLLING DIAPHRAGM FOR EXPELLING LIQUID FROM TAPERED TANKS

George B. Rabe, Sparta, N.J., assignor to Thiokol Chemical Corporation, Bristol, Pa.

Filed Dec. 16, 1966, Ser. No. 602,419

Int. Cl. B67d *5/54*

U.S. Cl. 222—386.5 **7 Claims**



1. Apparatus for expelling liquid from a tank of the type comprising a rolling diaphragm in the form of a sleeve having one end attached to the wall of the tank and its opposite end attached to a piston with means for supplying a pressurizing fluid through an inlet port to actuate the piston along the tank and roll the diaphragm attached thereto and expel liquid from the tank through an outlet port, that improvements which comprises providing a piston of smaller diameter than the diameter of the tank, an annular flange at the end of the diaphragm extending radially inward toward and attached to the outer periphery of the piston, and said end flange having indentations therein in the form of ribs extending from the outer periphery of the piston to the outer periphery of the diaphragm to cause the flange to initially buckle forwardly when pressure is applied and draw the outer periphery of the diaphragm inwardly as the flange moves forwardly to control the rolling action of the diaphragm.

3,847,311

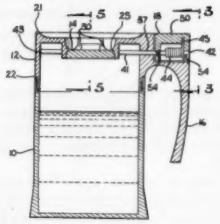
PIVOTED CLOSURE FOR A BEVERAGE CUP

Edward Flores, 23690 Summit Dr., Calabasas, and Thomas W. Holmes, 4005 So. Bronson Ave., Los Angeles, both of Calif., assignors to Edward Flores and Thomas H. Holmes, part interest to each

Filed Sept. 13, 1973, Ser. No. 396,834

Int. Cl. A47g *19/22*

U.S. Cl. 222—473 **7 Claims**



1. An apparatus for a container having a controllable aperture for selectively dispensing the contents from said container comprising:

a. a cover having an aperture which is disposed on the upper surface of said cover and displaced from the center of said cover, said cover having a pivot bore therein extending through the approximate center of said cover and said cover containing a notch portion disposed on the upper surface of said cover adjacent to said aperture;

b. a pivot member disposed within said pivot bore;

c. a pivot mount coupled to said pivot member, said pivot mount being cooperatively engaged within said notch portion;

d. a lid coupled to said pivot mount and adapted to sealingly engage said aperture, and

e. a lever means coupled to said pivot member for opening and closing said lid within said aperture, said lever means including a spring member biased so as to cause said lid to pivot downwardly about the axis of said pivot member when said lever means is actuated, thereby disengaging said lid from said aperture.

3,847,312

MOLTEN METAL POURING VALVE HAVING VALVE ACTUATOR EXTENDING THROUGH INCLINED CHANNEL

Harry Sidney Marr, and Arnold Chester, both of Sheffield, England, assignors to The British Iron and Steel Research Association, London, England

Filed Apr. 12, 1973, Ser. No. 350,593

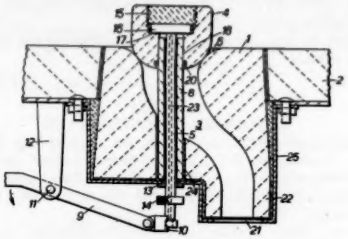
Claims priority, application Great Britain, Apr. 17, 1972, 17624/72

Int. Cl. B22d *37/00*

U.S. Cl. 222—501 **6 Claims**

1. Apparatus for pouring molten metal from a receptacle comprising a refractory nozzle adapted to be mounted within the receptacle and having a downwardly extending flow channel for removing molten metal from the receptacle, an upstanding refractory sleeve member secured at its lower end within a bore formed in the refractory nozzle, a refractory

stopper head operable to close off the flow channel, a stopper rod mounted within said upstanding refractory sleeve member and extending upwardly through the nozzle and operable to move the head into and out of contact with a nozzle seat formed about the inlet to the flow channel, and means to



impart vertical movement to the stopper head relative to the refractory sleeve member, the channel being inclined to the vertical along at least a portion of its length so that the outlet orifice of the flow channel which is formed in the lower surface of the nozzle is set to one side of the stopper rod.

3,847,313
RETRACTABLE TURNSPOUT CLOSURE
Lewis A. Micallef, New York, N.Y., assignor to Leeds and Micallef, New York, N.Y.
Filed Feb. 16, 1973, Ser. No. 332,923
Int. Cl. B67d *3/00*
U.S. Cl. 222—507 **14 Claims**

1. A retractable turnspout closure for closing the neck of a container and permitting selective discharge of the container contents, comprising in combination:

a plug adapted to extend across the opening defined by the neck of the container, said plug including a base having a first vertically extending axis, an opening in said base having a second vertically extending axis, a valve seat forming part of a valve disposed about said opening;

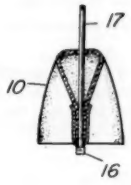
a rotatable spout having a passage therethrough for cooperating in directing the container contents during discharge therefrom, and a valve member also forming part of the valve adapted to assume a lower first position at which it engages with the valve seat of the plug in closing said opening and prevent the container contents from discharging from the spout passage and a raised second position at which it is spaced from the valve seat to permit the container contents to travel through the opening into the passage and be discharged therefrom;

a rotatable cap extending over the plug and having an opening through which the spout is adapted to project when said valve is in said raised second position and from which the spout is adapted to be retracted when said valve is in said lower first position;

contact means in the path of rotation of the spout for contacting the spout and move it from its retracted to its projecting position upon rotation of the cap in one direction; and

cam and cam follower means for moving the valve member from the lower first position to the raised second position to open the valve when the cap is rotated in said one direction and for moving the valve member from the raised second position to the lower first position to close the valve when the cap is rotated in said other direction the cam and cam follower means including mating ramps on the spout and plug for raising the valve member to open the valve when the spout is rotated from its retracted position to its projected position upon rotation of the cap in one direction, the cam and cam follower means including a ramp projecting downwardly from the interior of the cap for engagement with surfaces of the spout for lowering the valve member to close the valve when the spout is rotated from its projected position to its retracted position upon rotation of the cap in the other direction.

3,847,314
GARMENT SHAPER
John Florian, Bakersfield, Calif., assignor to Mobil Oil Corporation, New York, N.Y.
No Drawing. Filed Nov. 9, 1973, Ser. No. 414,486
Int. Cl. A47j *51/086*
U.S. Cl. 223—98 **1 Claim**



1. A garment shaper and hanger comprising the combination of:

a. an elongate hollow body of foamed resin having an open bottom edge, side and end walls extending upwardly from said edge to converge at a centrally disposed apex remote from said edge, the length of said side walls being substantially greater than the spacing between said side walls, the outer surfaces of said end walls conforming generally to the configuration of human shoulders; and

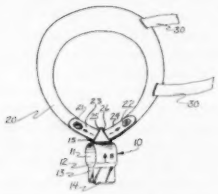
b. a stabilizing and suspending element having a shank extending from a point adjacent said edge midway of said end walls through said apex, a hook at the upper end of said shank above said apex arranged and adapted for suspending the combination and a clip at the lower end of said shank engaging said edge on both sides of said shank and retaining the same in abutting relationship.

3,847,315
HOLSTER
John E. Bianchi, 1601 Wilt Rd., Fallbrook, Calif. 92028
Filed July 18, 1972, Ser. No. 272,835
Int. Cl. F44c *33/02*
U.S. Cl. 224—2 C **6 Claims**

1. A holster for the carrying of hand guns comprising an elongated generally U-shaped resilient body including a longi-

tudinally extending tunnel like opening conformingly contoured to receive and hold the barrel or slide of a hand gun; said body further including an integral throat portion conformingly contoured to substantially enclose the trigger guard portion leaving the handle and barrel of the hand gun exposed when in position in the holster;

suspension means secured to said body for engaging a shoulder of the wearer and positioning said body in generally inverted U-position in the armpit region of the wearer with the barrel or slide of a hand gun contained therein in a generally horizontal position;



wherein said suspension means includes ring means secured to said body suspending said body from two directions at substantially a 90° angle whereby said holster may be stably positioned in the armpit region;

wherein said ring means comprises a generally triangular shaped ring with one side secured to said body and the two remaining sides constituting support points for said body;

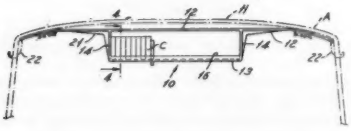
wherein the said one side of said triangular shaped ring is secured to said body in generally parallel alignment with the tunnel like opening in said body whereby the orientation of said opening and the barrel or slide of a hand gun therein is determined by said ring.

3,847,316

ROOFTOP TAPE STORAGE RACK

Robert P. McInnes, 1108 Fairway Dr., Linden, Mich. 48451

Filed Nov. 24, 1972, Ser. No. 309,051
Int. Cl. B60m *7/08*
U.S. Cl. 244—42.1 C **2 Claims**



1. In a rooftop tape storage rack, the combination comprising

a unitary device molded from organic plastic material and comprising a top wall, side walls, end walls and a bottom wall,

at least one of said side walls having a substantially lesser height than said end walls thereby forming an opening therein for receiving tape cartridges, said cartridges being adapted to be held in side-by-side relationship with the side walls adapted to engage the ends of the cartridges,

a slot associated with the bottom wall and extending substantially throughout the length thereof providing a finger receiving opening through which a finger can be inserted to lift the cartridges for ready removal from the opening in said side walls,

laterally extending integral mounting panels extending from said end walls at the area of juncture of said end walls and said top wall,

said laterally extending panels being curved generally downwardly with respect to said top wall,

re-enforcing ribs between said panel portions and said end walls,

extension panels adjustably mounted on said mounting panels,

and a stop adjustably mounted in said slot in said bottom wall for engaging the cartridges,

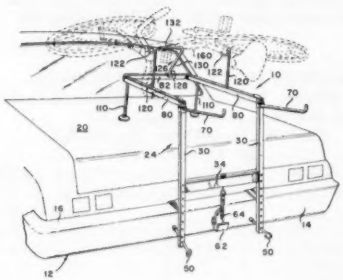
means on said extension panels for attaching the device to a vehicle.

3,847,317

AUTOMOBILE BICYCLE RACK

Samuel Joseph Raff, Chevy Chase, Md.; Robert Page Burruss, Jr., Washington, D.C.; Stanley Morris Lebow, Greenbelt, and Stephen Phillips Callahan, Chevy Chase, both of Md., assignors to Quality Engineered Specialty Products, Inc., Greenbelt, Md.

Filed Apr. 20, 1972, Ser. No. 245,726
Int. Cl. B60m *9/10*
U.S. Cl. 224—42.03 B **4 Claims**



1. A bicycle rack adapted for mounting on the rear end of an automobile having a trunk lid and a horizontal bumper with a face portion terminating in an upper and a lower flange, said bicycle rack comprising;

a frame assembly including a pair of spaced parallel supports, a cross piece connecting the two supports and maintaining them in spaced relation,

a bumper engaging and gripping bracket secured to each support and adapted to fit on and engage the upper flange of the bumper,

an adjusting screw threadedly carried by each support below the bumper bracket, said adjusting screw being adapted to engage the bumper below the bumper bracket to control the vertical attitude of its respective support,

a rack securing assembly connected to the frame cross piece, said assembly comprising a hook means adapted to engage the lower flange of the bumper and adjustable means connecting the hook to the cross piece to maintain tension between the hook and cross piece to retain the rack on the bumper,

a carrying arm affixed to and extending outwardly from each support to carry one or more bicycles, and

a U-frame assembly connected to the frame assembly, said U-frame assembly comprising:

a U-frame having a pair of parallel legs and a curved portion connecting same, means on the legs for connecting same to the frame supports,

a rest connected to and extending downwardly from each leg of the U-frame and adapted to engage the trunk lid, and

a tri-point support means extending upwardly from the U-frame.

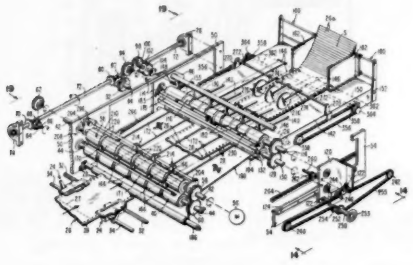
3,847,318
BURSTER APPARATUS

Frank V. Parenti, Dayton, and Robert W. Staneck, Springboro, both of Ohio, assignors to The Standard Register Company, Dayton, Ohio

Continuation-in-part of Ser. No. 103,620, Jan. 4, 1971, Pat. No. 3,741,451. This application Oct. 19, 1972, Ser. No. 298,938The portion of the term of this patent subsequent to June 26, 1990, has been disclaimed.

Int. Cl. B26f *3/02*

U.S. Cl. 225—100 **4 Claims**



1. Burster apparatus for successively separating a continuous strip of business forms along longitudinally spaced lines of cross perforations, said apparatus comprising a first set of roll members adapted to receive the strip therebetween, a second set of roll members spaced from said first set of roll members and adapted to receive the strip therebetween, means for driving said first and second sets of roll members for feeding the strip therebetween, said second set of roll members having a peripheral speed greater than the peripheral speed of said first set of roll members to effect separation of adjacent forms at each line of cross perforations located between said sets of roll members, one of the second set of roll members being a lower roll member and having axially spaced peripheral grooves therein, a table member positioned adjacent the lower roll member of the second set of roll members and having an upper surface adapted to receive and support the separated forms which are fed from said second set of roll members, and projection means supported by said table and projecting into at least one of said grooves within said one roll member of said second set of roll members to guide forms from the second set of roll members to the upper surface of the table, the projection means comprising a finger for each of said grooves, and including means for moving said fingers between an extended position projecting into the corresponding said grooves and a retracted position spaced from said second set of roll members.

3,847,319
METHOD AND APPARATUS FOR GROUPING AND HANDLING A PLURALITY OF WEBS

Kenneth F. Brandon, Webster, and Thomas J. Perconti, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Dec. 27, 1973, Ser. No. 428,937

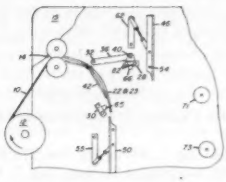
Int. Cl. B65h *23/30*

U.S. Cl. 226—4 **9 Claims**

1. A web handling apparatus for separating a plurality of flexible, resilient slit webs into discrete groups for movement along separate web paths, said webs extending generally parallel to one another and lying generally in a common plane, said apparatus comprising:

a. first and second opposed support members located transverse to said webs on opposite sides thereof;

b. means for providing relative movement of said support members so that said members are brought together at the plane of said webs;



c. said first support including retaining means for engaging and holding a first group of said webs when said support members are brought together; and

d. said second support including retaining means for engaging and holding a second group of said webs when said support members are brought together, said second group of webs being distinct from said first group of webs.

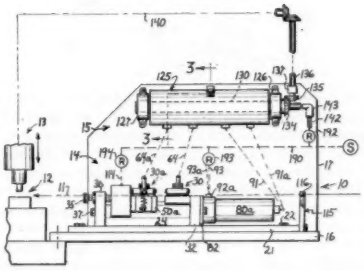
3,847,320
STOCK FEEDER

Albert W. Scribner, 6 Country Club Rd., Darien, Conn. 06820

Continuation of Ser. No. 106,507, Jan. 14, 1971, abandoned. This application Mar. 8, 1972, Ser. No. 232,910

Int. Cl. B65h *17/36*

U.S. Cl. 226—115 **28 Claims**



1. A duplex feeder for intermittently advancing stock into the work station of a punch press or the like: comprising a frame;

a pair of feed slides reciprocally mounted on said frame for movement in indexing and stock feeding directions;

a first pair of fluid motors for respectively actuating said feed slides;

stock gripping means carried by each of said feed slides and being adapted to grip and release the stock to be fed;

a second pair of fluid motors for respectively actuating said stock gripping means;

a rotary fluid pressure distributor arranged and connected to control the operation of said fluid motors, said rotary fluid pressure distributor including an inner valving member having a plurality of arcuately extending grooves formed therein, and an outer valving member having a plurality of apertures formed therein that respectively valvingly cooperate with said grooves in said inner member; means for mounting said inner and outer members for relative rotation, one of said members being adapted

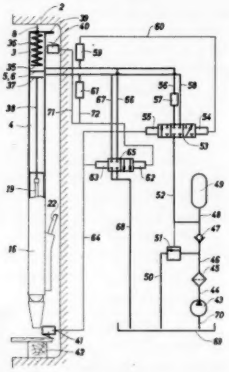
to be coupled to a source of fluid pressure whereby relative rotary movement between said members permits said apertures and grooves to control the supply and exhaust of fluid pressure to and from the respective fluid motors; drive means adapted when operated to rotate one of said members relative to the other of said members so that said fluid motors may be actuated in predetermined sequence whereby said feed slides alternately partake of stock feeding strokes; and fluid operated buffer means for cushioning the terminal portions of the respective stock feeding strokes of said feed slides.

3,847,321

NAILING DEVICE

Rune Kjell Evald Charlez, Tradlyckevagen 84, 432 00 Varberg, Sweden

Filed Aug. 1, 1972, Ser. No. 276,910
Claims priority, application Sweden, Aug. 2, 1971, 9859/71
Int. Cl. B27f 7/02
U.S. Cl. 227—7 **4 Claims**



1. A nailing device comprising a stationary holder, a driver, driving means comprising a power unit made up by a first and a second hydraulic cylinder mechanically connected end to end and positioned coaxially to each other with their piston rods extending in opposite directions, means resiliently pressing the piston rod of said first cylinder inwardly of said first cylinder, said second cylinder having its piston rod being positioned for engaging said driver, a nail guide element supported by said second cylinder which guide element will contact the object to be nailed by extension of the piston rod of said first hydraulic cylinder, means for supplying hydraulic pressure medium to said first cylinder for extending its piston rod and pushing said nail guide element against the object to be nailed, control means for causing pressure medium to be supplied to said second cylinder whose piston rod then acts upon the driver only after the nail guide element has contacted the object to be nailed, and control means for preventing said hydraulic pressure medium for leaving said first cylinder during the working movement of said second cylinder.

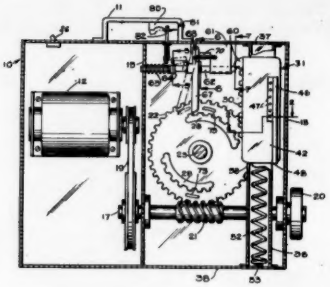
3,847,322

POWER DRIVEN HAMMER

Howard I. Smith, 2546 Willow Ln., Arnold, Mo. 63010

Filed Sept. 10, 1973, Ser. No. 396,047
Int. Cl. B25c 1/06
U.S. Cl. 227—132 **12 Claims**

1. In a power hammer: a rotary driving element; a base support; a hammer member slidably mounted on the support for movements from a cocked position in a driving direction; spring means to move the hammer member in the driving direction; releasable latch means on the support and engageable with the hammer member to hold the hammer member in cocked position against the spring means; and latch release means on the support to move the latch means to release position, the latch release means including means driven by



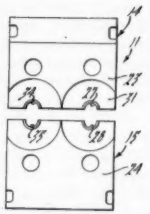
the driving element, and manually operable means to connect or disconnect the means driven by the driving element to the latch means to cause the driving element to move the latch means to release position.

3,847,323

FLASH REMOVAL MECHANISM

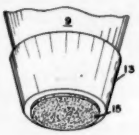
William E. Good, Cinnaminson, N.J., and Leonard DiGrasso, Philadelphia, Pa., assignors to Kelsey-Hayes Company, Romulus, Mich.

Filed Jan. 2, 1973, Ser. No. 320,256
Int. Cl. B23k 21/00
U.S. Cl. 228—3 **5 Claims**



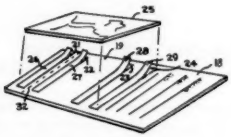
1. A mechanism for effecting welds and for removing flash from the resulting welded workpiece or the like comprising a first pair of dies having facing surfaces adapted to be moved toward and away from each other, said facing surfaces defining a first cavity adapted to grippingly engage a workpiece, and a second pair of dies having facing surfaces adapted to be moved toward and away from each other, said facing surfaces of said second pair of dies defining a second cavity adapted to receive the workpiece, said second cavity being of a larger dimension than the workpiece for receiving the workpiece with a clearance, a cutting surface defined by said second pair of dies around said second cavity thereof, said second pair of dies being reciprocal in the direction of the cavity for bringing said cutting edge into shearing engagement with a workpiece gripped in said first cavity of said first pair of dies and slidably received in said second cavity of said second pair of dies for shearing flash therefrom and third and fourth cavities formed, respectively, by said first and second pairs of dies, said third and fourth cavities being adapted to grippingly engage the workpiece for forming an upset therein in response to reciprocal movement of said pairs of dies.

3,847,324
NONTIPPING, DISPOSABLE DISHWARE
Joseph Uchanski, and Olga Uchanski, both of 2222 N. Monticello Av., Chicago, Ill. 60647
Filed Nov. 24, 1972, Ser. No. 309,477
Int. Cl. A47b *91/00*
U.S. Cl. 229—1.5 H 5 Claims



1. A non-tipping disposable dishware assembly comprising a first member having a bottom provided with a predetermined shape and adapted to receive food, and a second member adapted to support said first member in an eating position on a supporting surface, said second member having upper and lower supporting structures, said upper supporting structure conformably receiving said bottom of said first member, an adhesive member covering said lower supporting structure, and a strippable member protecting said adhesive member.

3,847,325
POST CARD FOR MAILING A PICTURE
Paul J. Nasalski, 39A Dilla St., Mass. 01757, and Edward L. Robinson, 104 Greenwood Av., Wakefield, Mass. 01880
Filed Feb. 14, 1973, Ser. No. 332,388
Int. Cl. B42d *15/02*
U.S. Cl. 229—92.8 9 Claims

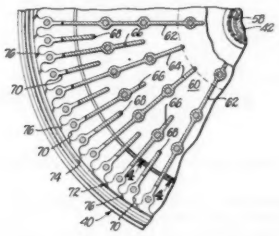


1. A post card for mailing a picture attached to the card comprising,
   space on the first side of the card for imprinting an address and applying postage,
   space on the second side of the card for attaching the picture,
   an adhesive covering at least part of the second side covered with a removable backing material to protect that adhesive until it is used, and
   an adhesive covering areas along at least two opposite edges of the first side with a removeable backing material to protect that adhesive until used,
   whereby a picture can be attached to the adhesive on the second side of the card and mailed to the addressee who can mount the card with the picture in an album by removing the backing from the first side and affixing the card to the album.

3,847,326
TOBACCO COMPOSITION
Colin James Webster, West Kilbride, Scotland, assignor to Imperial Chemical Industries Limited, London, England
Filed Mar. 18, 1971, Ser. No. 125,811
Claims priority, application Great Britain, Mar. 23, 1970, 13864/70
Int. Cl. A24b *15/04*
U.S. Cl. 131—17 8 Claims

1. A smoking mixture comprising as the essential ingredients reconstituted tobacco, pure, fat-free protein, selected from the group consisting of albumin, casein, gelatin, peptone, haemoglobim, wool, maize, wheat, soyabean, and ground nut proteins and a carotene hydrocarbon, the ratio of carotene hydrocarbon to protein being in the range 1:3 to 1:60 and the protein constituting from 0.5 to 25 percent by weight of the smoking mixture.

3,847,327
CENTRIFUGAL SEPARATOR
John W. Erikson, Huntington Beach, and Vitolis Budrys, La Mirada, both of Calif., assignors to Kobe, Inc., Huntington Park, Calif.
Filed June 4, 1973, Ser. No. 366,442
Int. Cl. B04b *1/12*
U.S. Cl. 233—32 4 Claims



1. In a centrifugal separator for a liquid containing undesirable heavier materials the combination of:
   a. an outer housing providing an axis;
   b. a rotary casing mounted for rotation in said housing in a predetermined direction about said axis;
   c. said casing having a radially central inlet and a radially central outlet;
   d. inlet means for delivering a liquid containing undesirable heavier materials to said inlet;
   e. outlet means carried by and leading to the exterior of said housing and communicating with said outlet for receiving cleaned liquid;
   f. baffles in said casing and dividing said casing into circumferentially spaced compartments; and
   g. the peripheral wall of said casing having passage means communicating with said compartments and said housing of a size to permit passage of heavier particles in the liquid, and some of the liquid, outwardly into said housing while causing at least a substantial portion of the liquid to be discharged from said casing through said outlet, said passage means including an annular collecting chamber in said peripheral wall of said casing between the inner and outer peripheries thereof, orifices respectively connecting said compartments to said collecting chamber, and tangential nozzles carried by said casing on the outer periphery thereof and facing rearwardly relative to the direction of rotation of said casing and communicating with said collecting chamber, said orifices extending generally rearwardly from said compartments to said collecting chamber with respect to the direction of rotation of said casing.

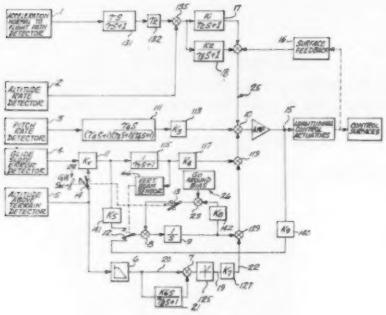
ERRATA

For Classes 235—54 thru 244—42 see:
Patents Nos. 3,847,345 thru 3,847,369

3,847,328
AUTOMATIC GO-AROUND CONTROL SYSTEM FOR AIRCRAFT

Robert D. Simpson, and Jimmie H. Boone, both of Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

Division of Ser. No. 221,958, Jan. 31, 1972, Pat. No. 3,801,049. This application Mar. 19, 1973, Ser. No. 342,345
Int. Cl. B64c *13/18*
U.S. Cl. 244—77 A **13 Claims**



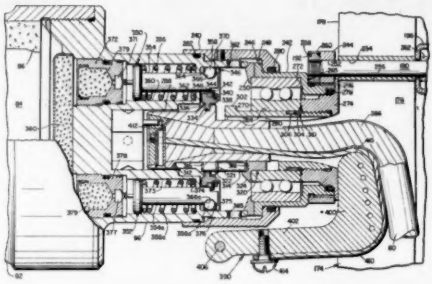
1. In combination in a pitch axis control system for an aircraft:
- first means for providing a first signal representative of the altitude rate of said aircraft:
- second means for generating a second signal representative of the desired change in said aircraft altitude rate during a go-around maneuver;
- third means including series switching means for coupling said second signal to lag circuit means for producing a third signal representative of commanded change in altitude rate during said go-around;
- fourth means for generating a fourth signal representative of the altitude rate of said aircraft at the initiation of said go-around maneuver;
- fifth means for combining said first signal, said third signal, and said fourth signal, and wherein said first signal nulls or cancels said third signal and said fourth signal thereby providing a fifth signal representative of the altitude rate error of said aircraft during a go-around manuever.

3,847,329
ROCKET ESCAPE APPARATUS

Robert M. Stanley, Denver, Colo., assignor to Stanley Aviation Corporation, Aurora, Colo.

Filed Aug. 31, 1972, Ser. No. 285,254
Int. Cl. B64d *25/10*
U.S. Cl. 244—122 AD **24 Claims**

1. In an apparatus for applying a pulling force to a person or other load, a rocket, an extendible, flexible towline connected to said rocket and providing a motion-transmitting connection between said rocket and said load, means for imparting airborne flight to said rocket in an unignited condition to extend and tension said towline, said towline, upon being extended to a tensioned condition by the unignited airborne flight of said rocket, exerting a pulling force which has a transverse component when the towline assumes a windblown posture and said rocket is at least partially weathercocked into an airstream, said transverse component being directed transversely of the longitudinal axis of said rocket, force direction converting means carried by said rocket for redirecting said transverse force component while the rocket is still at least partially weathercocked into said airstream, and

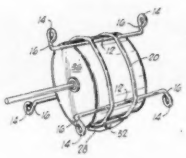


means responsive to the redirected force component and any pull which the tensioned towline exerts axially of the rocket for igniting the fuel of said rocket to cause the rocket to apply a pulling force to said load through the connection provided by the extended towline.

3,847,330
MOTOR MOUNTING BRACKET

Jimmie H. Morrison, 2921 Monitor, Norman, Okla. 73069

Filed Aug. 15, 1973, Ser. No. 388,604
Int. Cl. F16f *15/04*
U.S. Cl. 248—14 **10 Claims**



1. A motor mounting bracket comprising:
- a plurality of annular bands disposed in substantially parallel planes;
- a plurality of spaced, elongated rods extending substantially normal to said annular bands and each secured intermediate its length to each of said bands at points on the inside of the respective annular band whereby said rods are enclosed within said bands;
- means at one of the ends of each of said rods for securing said bracket to a supporting structure; and
- means for tensioning and constricting said bands to reduce the effective diameter thereof.

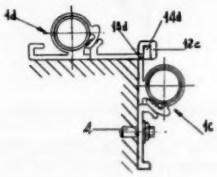
3,847,331
CLAMP DEVICE, ADAPTED TO BE ASSEMBLED IN SEQUENCE, FOR SUPPORTING AND RETAINING PIPES, CABLES AND THE LIKE

Michele Vallinotto, Strada San Michele 29, Testona-Moncalieri, and Luigi Villata, Via Stazione 6bis, Moncalieri, both of Italy

Filed Oct. 30, 1972, Ser. No. 301,834
Int. Cl. F16l *3/12*
U.S. Cl. 248—74 PB **1 Claim**

1. A thermal plastic clamping device adapted to be assembled in sequence for supporting and retaining pipes, cables

and the like, said clamping device comprising, in combination, an elongated base; an aperture in said base for receiving a fastener therethrough whereby said base may be mounted on a support surface; an arcuate, rigid foot integral with said base, said foot having teeth thereon; a deformable clamp integral with said foot and extending from said foot in an arcuate manner for engaging the pipe; a rigid finger-like terminal on said clamp having teeth thereon that are adapted to engage the teeth of said foot; and a counter-element on said base disposed in front of said teeth of said rigid foot for defining a cavity adapted to retain said finger therein, the teeth of said finger being disengageable from the teeth of said foot only



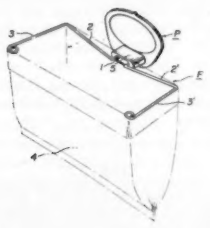
by means of a lateral displacement of said finger, said elongated base including an L-shaped hook at one end of said base and having a first member extending perpendicular to said base and a second member extending parallel to said base and a seat formed at the opposite end of said base by a recess extending inwardly of said end and a raised cross member on said opposite end and extending across said end and partially over said recess for receiving the L-shaped hook of the base of a second adjacent clamping device whereby at least two adjacent ones of said clamping devices may be secured to each other in a common plane or either in internal or external angular planes.

3,847,332

HANGER FOR DUST BAG

Yasuro Murai, 1-23, Miyoshi-cho, Tokyo, Japan

Filed Dec. 29, 1972, Ser. No. 319,671
Int. Cl. B65b *67/12*
U.S. Cl. 248—99 **2 Claims**



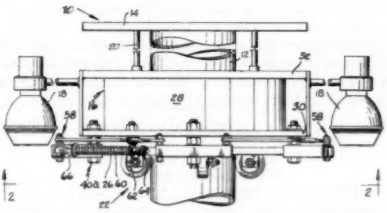
1. A hanger for supporting a foldable-type walled dust bag having an open top end in a vertical position on a wall support, said hanger comprising a horizontally oriented frame body designed and structurally adapted to spread and hold said bag top end unobstructedly open, said frame body being made from a single wire having a bendable, but self-shape-sustaining characteristic and embodying a central, horizontally disposed U-shaped base portion, a pair of members bent outwardly at a substantially right angle and slightly backwardly and upwardly from said U-shaped base portion to form a pair of duplicate side portions, each of said members being bent at a substantially right angle to said side portions in the same direction to form a pair of duplicate longitudinally spaced parallel coplanar arm portions, each of said portions terminating in a coiled tip portion, said side portions and said arm portions with tip portions forming a U-shaped enclosure whereby all three sides of said U-shaped enclosure resiliently urge against the inside wall of the dust bag to hold it firmly in its open position and simultaneously the two free arm portions tend to move outwardly against the inside wall of the dust bag with increasing force as the bag with its contents becomes heavier; a vertical mounting plate having a horizontally disposed cylindrical bore therethrough, the U-shaped base portion of said frame body being fitted and fixedly retained in said cylindrical bore; and means associated with said mounting plate for readily attachably securing said hanger to said wall support.

3,847,333

METHOD AND APPARATUS FOR CENTERING A LUMINAIRE SUPPORT

Robert Dale Zeller, Newark, Ohio, assignor to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Feb. 5, 1973, Ser. No. 329,514
Int. Cl. F21v *21/14*
U.S. Cl. 248—125 **17 Claims**



1. An apparatus for maintaining a ring-like object support in a predetermined location around the external surface of a post, said apparatus comprising:

a. a plurality of location maintaining arrangements connected with said object support and movable relative to said support along respective predetermined paths;

b. means connected with said location maintaining arrangements for biasing all of said arrangements in corresponding directions along their respective paths; and

c. a plurality of rod means substantially disposed within a common plane and interconnecting said arrangements to one another such that movement of any one of said arrangements along its predetermined path causes said pluality of rod means to substantially simultaneously move all of said other arrangements along their respective paths in a direction corresponding to the movement of said one arrangement.

3,847,334

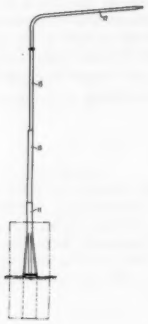
STANDARD OR POLE FOR SUPPORTING LIGHT FITTINGS

Rolf Erik Forsberg, and Erik Einar Sparr, both of Mora, Sweden, assignors to AB Wikstrand & Berg, Wibe, Mora, Sweden

Filed May 1, 1973, Ser. No. 356,137
Claims priority, application Sweden, May 9, 1972, 6074/72
Int. Cl. E02d *27/42*
U.S. Cl. 248—158 **10 Claims**

1. A pole or standard for supporting light fittings comprising an upper structure forming a major portion of the length of the pole or standard, said upper structure including a central vertical tubular structure, and a foot formed of a plurality of spaced apart tongues or struts having upper ends terminating

at and united to the lower end of said tubular structure and having lower ends connected to a common base which is of greater horizontal dimension than said tubular structure, said tongues or struts being arranged symmetrically with respect to the axis of said tubular structure and extending downwardly



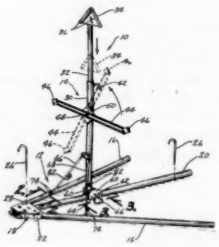
beyond the lower end of the latter and outwardly, whereby said tongues or struts support said tubular structure from said base and provide an assembly which is yieldable to horizontal forces occurring on collision of a vehicle with said tongues or struts.

3,847,335

FOLDABLE PORTABLE SIGN STANDARD

H. Cameron Ross, 203 South St., Audubon, Iowa 50025

Filed Aug. 10, 1973, Ser. No. 387,527
Int. Cl. F16m *11/38*
U.S. Cl. 248—166 **10 Claims**



1. A sign standard comprising, a base including a trio of legs spaced less than ninety degrees apart in an open position and adapted to engage a support surface along their entire length, said legs being pivotally interconnected at one end and adapted to be pivoted together to a closed position wherein said legs extend in parallel engaging relationship to each other,

an upstanding post pivotally supported on said center leg and said post being adapted to pivot to a lowered position parallel to said trio of legs, and

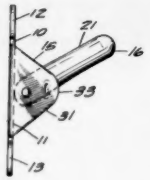
a pair of support braces extend from said post to detachable engagement with each of said outer legs when said post is in its upstanding position and said braces pivot to a position parallel with said post when said post is in a lowered position.

3,847,336

RELIEVABLE HANGER FOR CLOTHING AND THE LIKE

Earl L. Morris, and Theodore J. Sally, both of Whittier, Calif., assignors to Acorn Engineering Company, Industry, Calif.

Filed Nov. 20, 1972, Ser. No. 308,236
Int. Cl. F16n *13/00*
U.S. Cl. 248—294 **3 Claims**



1. A relievable hanger for supporting articles of clothing or the like, comprising:

an article-supporting arm having a rounded, elongated body and a hole therethrough adjacent one end thereof disposed substantially transverse to the axis of said body;

a bracket element including a base plate for attachment to a vertical structural element and including a pair of forwardly-projecting, substantially parallel bracket flanges, the distance between said bracket flanges being greater than the cross section of said arm so as to place said bracket flanges in contiguous relationship to said arm to permit said arm to move freely therebetween, and the top and bottom edges of said bracket flanges being formed at angles of not less than substantially forty-five degrees to said base plate and further having a hole in each bracket flange, the centers of which lie on the same centerline, said centerline being disposed substantially transverse to said base plate;

a journal pin for said arm said pin having a diameter smaller than said hole in said arm and freely movable therein and further being smaller in diameter than said holes in said bracket flanges, one end of said pin being disposed within one of said bracket flange holes and fixedly joined to said bracket flange and the other end being disposed within the other of said bracket flange holes and having a uniform cross-section from within the hole to the extremity of said pin end whereby said pin end is freely movable in longitudinal coaxial relationship to said hole;

a first blunted shoulder on the inside face of one of said bracket flanges upon which said arm may rest; and

a second blunted shoulder oppositely disposed from said first blunted shoulder on the inside face of the other of said bracket flanges upon which said arm may rest, wherein said first and second blunted shoulders are rounded and elongated and are substantially parallel to said base plate.

3,847,337

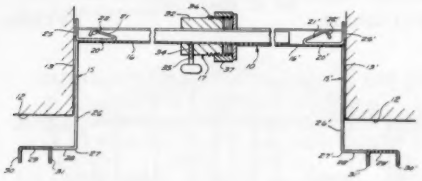
WINDOW SHADE AND CURTAIN BRACKETS AND MOUNTING MEANS THEREFOR

John Patrick, 133-33 Sanford Ave., Flushing, N.Y. 11355, and George J. Durmann, 97 Intervale Ave., South Framingdale, N.Y. 11735

Filed Sept. 24, 1973, Ser. No. 400,069
Int. Cl. A47h *1/14*
U.S. Cl. 248—252 **12 Claims**

1. A compressively mountable bracket assemblage for window frames and like openings comprising plate members adapted to engage opposed vertical surfaces within a window frame or like opening, telescopically interfitting rails extending between said plate members and positioned with respect thereto by protruding spring elements on said plate members adapted to extend into adjacent ends of said telescopic rails, the smaller of said telescopic rails slidably and telescopically

receiving a compression unit, said compression unit having a generally cylindrical body part, means for locking said body part in desired positions longitudinally of said smaller rail, a washer-like element are slidably engaging said smaller rail between said body part and the larger telescopic rail, the inner dimension of said washer-like element being such as to provide bearing engagement with the end of said larger rail, and said compression unit further including a collar having



threaded engagement with said body part and bearing engagement with said washer-like element, rotation of said collar with respect to said body part developing substantial compressive force between the anchorage point of said body part on the smaller rail and the end of said larger rail to thereby firmly engage said plate members with the opposed vertical surfaces of said window frame or like opening, and said plate members carrying means for the support of conventional coverings for said window or like opening.

3,847,338

ADJUSTABLE HEIGHT SEAT

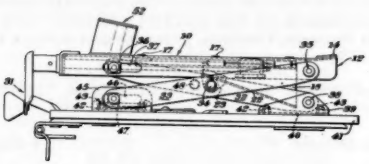
Albert John Adams, Middlesex, England, assignor to A. W. Chapman Limited, London, England

Filed Feb. 26, 1973, Ser. No. 335,528

Claims priority, application Great Britain, Feb. 26, 1972, 8944/72

Int. Cl. F16m *13/00*

U.S. Cl. 248—419 **3 Claims**



1. An adjustable height seat which includes a seat frame having spaced side members and spaced front and rear members all of which are rigidly connected to one another; two spaced lever pairs disposed parallel to one another in substantially vertical planes, the inner lever of one lever pair being connected to the inner lever of the other lever pair by a torsion rod having non-circular-section ends extending through complementary holes in said inner levers and being rivetted thereto; the levers in each lever pair being pivotally connected to one another in X-configuration by a shaft extending through the two spaced lever pairs, said shaft being spaced from and non-coaxial with said torsion rod; corresponding one ends of corresponding one levers of each lever pair being pivotally rivetted directly to corresponding ones of said seat frame members; corresponding one ends of the corresponding other levers of each lever pair being connected by pin-and-slot connections directly to said corresponding ones of said seat frame members at locations spaced from the rivetting of the ends of said corresponding one levers thereto, the pin being carried by the lever and the slot being formed in the seat frame member; the corresponding other ends of said corresponding one levers of each lever pair having a pin-and-slot connection with bracket members, the pin being carried by the lever and the slot being formed in the bracket member; the corresponding other ends of said corresponding other levers of each lever pair being rivetted to other bracket members which are spaced from the first-mentioned bracket members; two wedge-shaped plates generally vertically disposed in the vicinities of each lever pair and located inwardly of the lever pairs, each of said wedge-shaped plates having vertically separated non-parallel edges with flanges thereon which are substantially normal to the general plane of the plate, the flanges at one of said edges engaging a slide secured to the respective seat frame member and the flanges at the other of said edges engaging a wedge retaining block formed solely of a synthetic resin material having a low coefficient of friction which is supported by said shaft, each of said wedge retaining blocks being formed with a bore for the accommodation of part of said shaft and with a slot at right angle to and spaced above said bore for the guided sliding of ssid flanges at said other edges, each wedge-shaped plate having freedom for sliding movements relative both to said shaft and to said seat frame and being so slidably mounted with the interposition of additional elements of synthetic resin material having a low coefficient of friction between metal parts, said wedge-shaped plates being interconnected centrally by a connecting piece which carries a nut of a screw and nut mechanism, whereby rotation of the screw in the nut will cause displacement of said wedge-shaped plates relative to said shaft and said seat frame to alter the angular relationships between the levers of each lever pair as permitted by said pin-and-slot connections, with resultant adjustment of the spacing between the said bracket members and the seat frame.

ERRATUM

For Class 248—503 see:
Patent No. 3,847,344

3,847,339

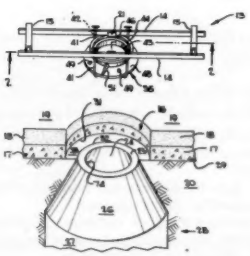
APPARATUS FOR INSTALLING MANHOLE RINGS

Lewis E. Farrell, 10804 Ballentrae Way, Rancho Cordova, Calif. 95670

Filed Sept. 25, 1972, Ser. No. 291,989

Int. Cl. E02d *29/12*

U.S. Cl. 249—1 **4 Claims**



1. A device for installing a manhole ring coaxially with and above the annular support shoulder of a manhole located at the bottom of an opening extending below the surface of an encompassing layer of paving, said device comprising:

a. an elongated frame capable of spanning the opening when supported on the paving surface;

b. depending means removably attached to said frame for temporarily supporting the manhole ring above and in coaxial relation to the manhole support shoulder, said depending means including a plurality of J-shaped hooks each having a vertical stem supported at the upper end on said frame and a generally transverse foot on the lower

end, said J-hook being capable of being oriented so that said foot underlies and supports the manhole ring during deposition and setting of the concrete, said stem being separable into an upper portion and a lower portion, said upper portion being removable from said frame after setting of the concrete; and,

c. a collapsible, generally cylindrical shield capable of being expanded into temporary face to face engagement with the inner wall of the manhole ring and the subjacent inner margin of the support shoulder, said shield and said ring defining the inner wall of a generally annular chamber extending radially outwardly to the encompassing wall of paving material, said chamber extending vertically between the support shoulder and the plane of the paving surface, said depending means being detachable from said frame to permit the removal of said frame after concrete deposited in said chamber has set and said shield has been collapsed and separated from said frame.

3,847,340

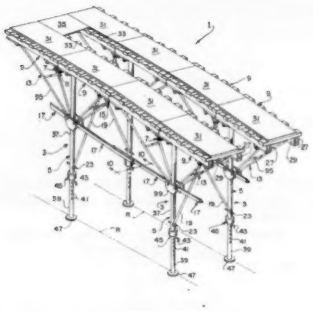
SHORING FIXTURE FOR POURED CONCRETE CONSTRUCTION

Charles L. Ficken, 107 Miramar Lane, Columbia, Mo. 65201, and John L. Gober, 221 Smith Ave., Kirkwood, Mo. 63122

Filed Feb. 14, 1972, Ser. No. 225,922

Int. Cl. E04g *11/48*

U.S. Cl. 249—18 **18 Claims**



1. A shoring fixture for poured concrete construction or the like comprising:

a post;

a crosshead at the upper end of the post;

a pair of deck sections adapted to be supported in end-to-end abutting relation on the upper end of the post with the abutting ends of the deck sections bearing on said crosshead;

means for detachably securing said abutting ends of said deck sections on said crosshead;

means for bracing the deck sections extending between the post and the deck sections and connected to the deck sections adjacent their outer ends;

each said deck section comprising a pair of spaced apart parallel side beams extending lengthwise of the deck section, a deck panel constituting a pouring surface for the concrete which is to be poured; and

a pair of interconnecting members slidably mounted longitudinally of said side beams for movement between a retracted position in which the outer end of a respective interconnecting member is withdrawn into its respective side beam and an extended position in which its outer end projects out beyond the end of its respective deck section for being received by a respective side beam of an adjacent deck section thereby to rigidly secure said adjacent deck sections together.

3,847,341

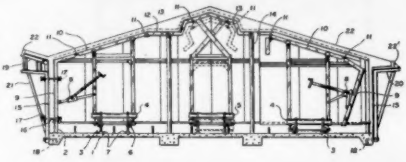
COLLAPSIBLE INTERIOR FORM FOR A MONOLITHIC STRUCTURE

Charles W. Stickler, Jr., Mohnton, Pa., assignor to Gray Tech Industries, Inc., Mohnton, Pa.

Division of Ser. No. 200,060, Nov. 18, 1971, Pat. No. 3,742,102, which is a continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application June 20, 1973, Ser. No. 371,826

Int. Cl. E04g *11/02*

U.S. Cl. 249—27 **5 Claims**



1. Apparatus comprising a form for pouring concrete to form integrally connected roof and sidewalls of a house, comprising an interior form including a plurality of pivotally interconnected roof and sidewall forming portions, each roof forming portion including a pivotally connected extension, a central roof forming portion with pivotally connected extensions, a plurality of wheeled form carriers, jack means for lifting vertically upwardly said form carriers, one of said carriers being located centrally for lifting and positioning said central roof forming portion and for holding it in confronting relationship with two other carriers located laterally thereof for lifting and positioning the said roof and sidewall forming portions with the roof forming portions slanted upwardly toward the center of the house, positioning linkage means pivotally connected to the sides of said two last mentioned form carriers for pivotally moving said sidewall forming portions from an inwardly retracted angular position to a normal vertical position.

3,847,342

APPARATUS FOR THE PRODUCTION OF RECORDING ELECTRODES OF THE MULTIPLE NEEDLE TYPE

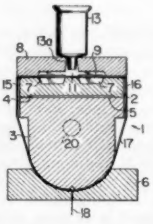
Tadashi Matsuura, Yokohama, Japan, assignor to Ricoh Co., Ltd., Tokyo, Japan

Filed Dec. 7, 1972, Ser. No. 312,941

Claims priority, application Japan, Dec. 16, 1971, 46-102174

Int. Cl. B29c *6/04*

U.S. Cl. 249—85 **6 Claims**



1. An apparatus for the production of recording electrodes of the multiple needle type comprising a lower mold having a planar upper surface and a substantially convex lower surface, said planar upper surface being formed thereon with a plurality of resin receiving rectangular recesses disposed parallel to each other and along the longitudinal axis of the lower mold, said lower mold being adapted to have a wire wound spirally in convolutions on its periphery in predetermined spaced apart relationship, and an upper mold formed on its lower

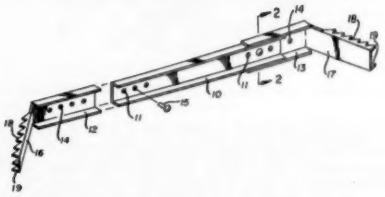
surface with a plurality of shallow rectangular recesses in positions corresponding to those of the resin receiving recesses formed in the lower mold and in its upper portion with at least one resin injecting gate for injecting therethrough a resin into a cavity formed by the rectangular recesses in the upper and lower molds, to thereby embed in resin a plurality of parallel lengths of wire, each length being that part of a convolution of wire wound over the lower mold which is within said cavity, while the remainder of the wire length of the convolution is not embedded in resin.

3,847,343

ADJUSTABLE SELF WEDGING DEVICES FOR SIDE BOARDS IN INGOT MOLDS

James B. LaBate, Chippewa Park Rd., Beaver Falls, Pa. 15010

Filed Oct. 31, 1973, Ser. No. 411,348
Int. Cl. B22d *7/10*
U.S. Cl. 249—202 **6 Claims**



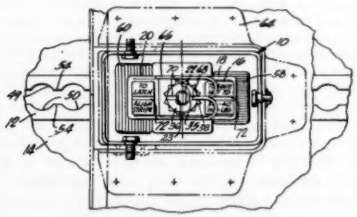
1. Lengthwise adjustable self wedging devices for side boards in ingot molds comprising a pair of elongated metal members, each of which consists of a central section and a pair of end sections adjustably secured thereto, oppositely disposed angularly positioned distortable end portions on each of said end sections, sharp pointed portions extending outwardly on each of said end portions and arranged to be embedded in said side boards when said self wedging devices are forcibly positioned between said side boards in said ingot mold so as to hold the same in position therein.

3,847,344

TRACK FASTENER

Stanley N. Kulczycki, Redondo Beach, and Edward E. Betts, Costa Mesa, both of Calif., assignors to McDonnell Douglas Corporation, Santa Monica, Calif.

Filed Apr. 19, 1971, Ser. No. 134,986
Int. Cl. A44b *17/00*; **A62b** *35/00*
U.S. Cl. 248—503 **2 Claims**



1. A fastener for use with a track in a supporting structure to secure removable structure to the supporting structure, said fastener comprising:

a base including abutment means adapted to engage the track to restrain said fastener from movement in a planar direction, and connection means adapted to connect the removable structure to said fastener;

a stud assembly including a rotatable shaft which extends through said base, said shaft including a lower T-shaped integral end portion adapted to predeterminately engage with the track to fix said fastener from movement at a right angle to said planar direction when said rotatable shaft is rotated a predetermined angle in a predetermined direction, a threaded portion adapted to draw said T-shaped end portion into tight engagement with the track and means to indicate said T-shaped end portion is predeterminately engaged with the track, said connector means including a connector member, said connector being adapted for fastening to the removable structure and having a first serrated connector portion oriented in a first direction and a second serrated connector portion oriented in a second direction; said connector defining an opening between said first and second serrated connector portions through which said T-shaped end portion and said base abutment means extend, a first serrated portion of said base oriented in said first direction, and a second serrated portion of said base oriented in said second direction whereby said first and second serrated portions mate with said first and second serrated connector portions of said connector member to retain and enable adjustment of the removable structure in said planar direction with respect to the supporting structure; and

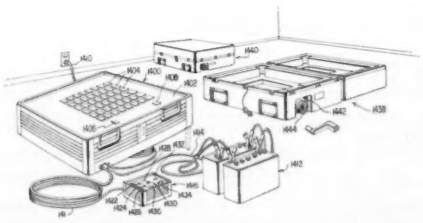
means threadably engaging said threaded shaft portion and bearing against said base so that when said threadably engaging means are twisted in the predetermined direction and the predetermined angle to engage said T-shaped end portion with the track, said threaded shaft portion draws said T-shaped end portion into tight engagement with the track.

3,847,345

ELECTRONIC VOTING MACHINE

Michael T. Moldovan, Jr.; Charles J. Lindros, both of Lakewood; Lawrence L. Anderson, Jamestown; Robert D. Wescott, Jamestown, and Richard J. Cusimano, Jamestown, all of N.Y., assignors to AVM Corporation, Jamestown, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,411
Int. Cl. G07c *13/00*
U.S. Cl. 235—54 F **12 Claims**



1. In an automatic voting machine having a vote selection panel providing a plurality of voting points, the combination of:

a plurality of normally open switches defining a switch matrix having a plurality of input lines and a plurality of output lines, certain of said switches being located at said voting points and constituting vote selection switches, another of said switches being located remote from said vote selection panel and constituting a vote enabling switch, and a further one of said switches being associated with said voting panel and constituting a voter exit switch;

a plurality of normally inactive indicators defining an indicator matrix having a plurality of first input lines and a plurality of second input lines, one of said indicators being associated with each of said voting points;

a plurality of normally inactive counters defining a counter matrix having a plurality of first input lines and a plurality of second input lines, one of said counters being associated with each of said voting points;

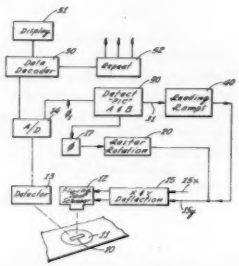
clock means having a plurality of output lines connected to the input lines of said switch matrix and to said first input lines of said indicator matrix and of said counter matrix for sequentially and cyclically activating such input lines; and

logic means connected to the output lines of said switch matrix for cyclically and sequentially activating said second input lines of said indicator matrix in response to actuation of said vote enabling switch and in accord with a pattern of vote selection switches selectively actuated by a voter subsequent to the actuation of said vote enabling switch to activate those indicators corresponding to the voter-selected vote selection switches and for sequentially activating said second input lines of said counter matrix in accord with said pattern in response to actuation of said voter exit switch to activate those counters corresponding to the voter-selected vote selection switches.

3,847,346
DATA FIELD RECOGNITION AND READING METHOD AND SYSTEM

Volker Dolch, Neu Isenburg, Germany, assignor to Scanner, Inc., Houston, Tex.

Continuation of Ser. No. 284,733, Aug. 30, 1972, abandoned. This application Jan. 21, 1974, Ser. No. 435,358
Int. Cl. G06k 7/00
U.S. Cl. 235—61.11 E **32 Claims**



1. The method of identifying objects by means of data information, which objects may appear in random position and orientation and at random times in a particular area, comprising:

providing a data field on a surface of the objects which data field is comprised of contrasting data markings arranged in at least one track;

providing to the data field a contrasting line pattern identifying location and orientation of the track in the data field, the pattern including plural lines extending in a first direction, and being spaced in a direction normal to the first direction;

line scanning the particular area in a scanning field for detecting repeatedly a particular signal pattern as resulting from line scanning the particular area when containing a data field with line pattern therein, and when line scanned transverse to the first direction and within an angular range about the said normal direction;

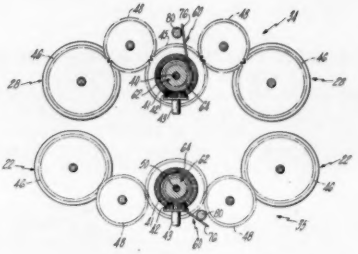
determining the data field portion and orientation as a result of said line scanning when detecting repeatedly said particular signal pattern; and

providing a unique data field scanning pattern on basis of said position and orientation determination for causing said data track to be scanned repeatedly in direction of its extension for reading the data contained in the data field.

3,847,347
ROTARY DRIVE ANTI-BACKLASH DEVICE

Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.

Filed Jan. 11, 1974, Ser. No. 432,577
Int. Cl. G06c 25/00
U.S. Cl. 235—131 R **9 Claims**

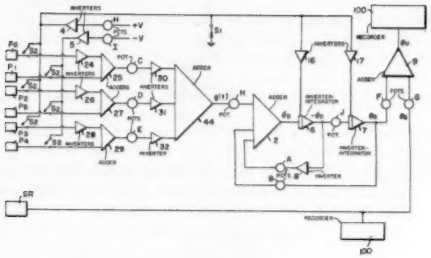


1. In a fluid delivery register for a fluid delivery system having fluid delivery means selectively operable for initiating and terminating the delivery of fluid, a fluid meter for metering the amount of fluid delivered, and a first rotary drive train driven by the meter for operating the register comprising a variator having a rotary input connected to and rotated by the meter in accordance with the volume amount of fluid delivered, a rotary output for operating the register and gear means interconnecting the rotary input and output settable for establishing the unit volume price of the fluid and for rotating the rotary output in accordance with the rotation of the rotary input and the established unit volume price; the register having at least one resettable rotary counter with a plurality of coaxial rotary counter wheels of ascending order, a second rotary drive train connecting the rotary output of the variator with the lowest order counter wheel of said one counter to rotate the counter for registering the cost amount of fluid delivered and disengageable for disengaging the second rotary drive train from said one counter, reset means operable between fluid deliveries for temporarily disengaging each rotary drive train of the register and for resetting the coaxial counter wheels of each resettable rotary counter rotated thereby while the rotary drive train is disengaged, and counter drive anti-backlash means for removing inertia overtravel of each counter upon termination of a fluid delivery, the improvement wherein the counter drive anti-backlash means comprises a friction device connected to said second rotary drive train and having a drum member with an external annular friction surface; a coil spring having a first free end and a second end member, a first helical friction spring section with a plurality of generally helical friction coils extending from the first end, each surrounding and in frictional engagement with said annular friction surface, and a second torsion spring section between the first helical friction spring section and said second end member, and means mounting the drum member and said second end member of the coil spring for rotation in one angular direction of the drum member relative to the coil spring by the second rotary drive train, the helical friction coils of the friction spring section extending generally helically around said annular friction surface from said first end thereof in said one angular direction whereby upon rotation of the second counter drive train during the delivery of fluid, the frictional engagement of each helical coil of the friction spring section with the friction surface assists in angularly deflecting and thereby torsionally loading the torsion spring section and radially expands the friction spring section to reduce its frictional engagement with the annular friction surface.

3,847,348
ROLL COMPUTER

Joseph E. Russ, Spencerville, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 14, 1973, Ser. No. 415,693
Int. Cl. G06g *7/70*
U.S. Cl. 235—151.3 **6 Claims**



1. A device for determining the unstabilized roll of a ship equipped with a roll tank comprising:

first means for developing a first electrical signal proportional to the difference between the unstabilized roll angle and the stabilized roll angle of the ship;

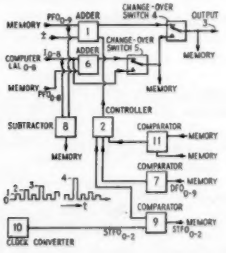
second means for developing a second electrical signal proportional to the stabilized roll angle of the ship;

third means for adding said first and second signals to produce a third electrical signal proportional to the unstabilized roll angle of the ship, whereby said third signal is indicative of the effectiveness of said roll tank when compared with said second signal.

3,847,349
INTERPOLATORS

Peter Charles Eastty, London, England, assignor to Electronic Music Studios (London) Limited, London, England

Filed Dec. 21, 1973, Ser. No. 427,269
Claims priority, application Great Britain, Dec. 22, 1972, 59541/72
Int. Cl. G06f *7/38*
U.S. Cl. 235—152 **13 Claims**



1. An interpolating arrangement comprising:

stepping means for interpolating in small steps from an initial value, said stepping means having a control input for receiving signals to initiate respective ones of said small steps;

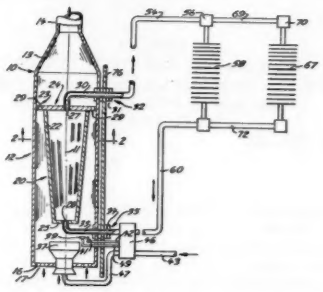
comparison means having first input means available to receive a reference value dependent upon a predefined real-time duration of an interpolating operation from said initial value to a further value, second input means and an output for transmitting for said stepping means a possibly step-initiating signal when said comparison means senses a predetermined relationship between the values of signals at said first input means and said second input means of said comparison means; and

signal generator means connected to said second input means of said comparison means and being operable to generate a succession of values repeatedly during said predefined duration of said interpolating operation.

3,847,350
VEHICLE HEATING UNIT

George Scott Thompson, 3457 Victoria Dr., Coquitlam, B.C., Canada

Filed Jan. 2, 1973, Ser. No. 320,321
Int. Cl. F24d *3/00*
U.S. Cl. 237—8 A **5 Claims**



1. A self-contained heating unit for heating a vehicle independently of external electrical power, the unit being adapted to burn a compressed inflammable gas from a pressurized gas supply, heat generated by burning being transferred to the vehicle through a heat emitter in the vehicle, the heating unit including:

a. a cylindrical heater chamber having a upper end having a flue, and a lower end having openings to admit air, the chamber being adapted to be secured vertically to a vehicle body portion,

b. a heater tank to heat liquid, the tank having inlet and outlet ports and being disposed generally centrally within the heater chamber,

c. a liquid delivery pipe communicating with the outlet port and the heat emitter to conduct heated liquid from the tank to the heat emitter,

d. a liquid return pipe communicating with the inlet port and the heat emitter so that the tank receives cooled liquid from the heat emitter,

the heater tank, the pipes and the heat emitter thus forming a closed loop, the heater tank being disposed below the heat emitter so that heated liquid produces a thermo-syphon circulation in the closed loop, the unit further including:

e. a gas burner adapted to heat the liquid in the tank, the burner having a main jet and a pilot jet the jets being positioned closely together, the burner being positioned beneath the heater tank so that the pilot jet is adjacent an opening at the lower end of the heater chamber to facilitate lighting of the pilot jet,

f. a main jet delivery line feeding gas to the main jet,

g. a pilot jet delivery line feeding gas to the pilot jet,

h. a gas supply line extending from the gas supply, a manual valve cooperating with the supply line to control gas flow from the supply,

i. an automatic temperature control unit having: an intake connected to the gas supply line to receive gas; a temperature sensing element in the liquid return pipe; a cut-off valve to control entry of gas into the control unit from the gas supply; gas outlets communicating with the main jet

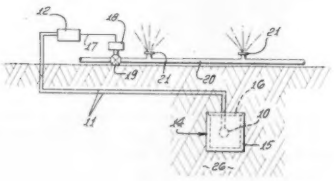
delivery line and the pilot jet delivery line respectively, the outlets being controlled by respective valves; a thermocouple adjacent the pilot jet to be heated by the pilot jet, the thermo couple providing electric power to actuate the valves controlling the gas supply to the pilot jet and to the main jet; so that should the pilot light become extinguished when the main jet is not lit the gas supply to both jets is stopped, and if the temperature sensing device indicates excessively high liquid temperature in the return pipe the gas supply to both jets is stopped, the automatic temperature control unit further including: a casing enclosing the valves aforesaid, the casing embracing the return pipe and the gas supply line so as to provide a compact unit which can be easily fitted to a vehicle and coupled to a heat emitter to provide heating of the vehicle without the use of an external electrical power source, thus permitting operation of the device at temperatures when normal vehicle storage batteries are inoperative.

3,847,351

SOIL MATRIC POTENTIAL SENSOR

Harold W. Hasenbeck, 1524 Almeda st., Pomona, Calif. 91767

Filed June 29, 1973, Ser. No. 374,865
Int. Cl. A01g *25/00*
U.S. Cl. 239—63 **9 Claims**



1. In a matric potential sensor for use in underground soil and in combination with an automatic, closed-loop, irrigation control, the combination comprising

a. a heat diffusion sensor in the form of a solid state, heat diffusion thermistor having an output which varies as a function of changes in heat diffusion from or to the sensor, and

b. porous granular material in the form of glass beads extending in adjacent, heat transfer relation with the heat diffusion sensor and characterized as capable of absorbing water when pressure in the soil is greater than the porous material and losing water content as the matric potential of the soil increases, thereby providing the required increase or decrease in sensor heat-diffusion.

3,847,352

WELDING APPARATUS

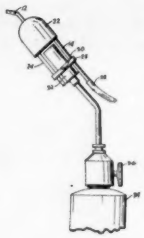
John A. Therrien, Sarnia, Ontario, Canada, assignor to The Raymond Lee Organization, New York, N.Y., a part interest

Filed Aug. 21, 1973, Ser. No. 390,211
Int. Cl. F23d *15/00*
U.S. Cl. 239—133 **2 Claims**

1. Welding apparatus adapted to weld plastics and comprising:

a hollow coil having a discharge tip at one end and an inlet at an opposite end;

first means connected to said opposite end to pass a first gas through said coil under pressure for release through said tip, said first gas being chemically nonreactive with plastics; and



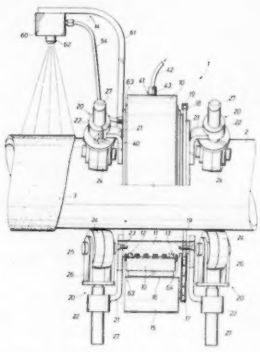
second means to apply heat to said coil to heat the first gas prior to release, said second means including a torch and fuel therefor, said fuel being a second gas.

3,847,353

SPRAY DEVICE FOR COATING THE OUTSIDE OF PIPE

J. Harry Wynne, II, 5300 Pershing Ave., Houston, Tex. 76107

Filed Nov. 14, 1973, Ser. No. 415,827
Int. Cl. B05b *3/18;* **B05c** *5/00;* **B05b** *13/04*
U.S. Cl. 239—184 **10 Claims**



1. A spray device comprising:

an outer body means,

a rotating means which rotates within said outer body means,

bearing means between said outer body means and said rotating means which forms at least one fluid chamber, and

spray means on said rotating means in fluid communication with said chamber.

3,847,354

SHOWER HEAD ADDITIVE DISPENSER

Robert H. Lemond, Rt. No. 1, Box 190, Ellsworth, Mich. 49729

Filed Sept. 20, 1973, Ser. No. 399,102
Int. Cl. B05b *7/32*
U.S. Cl. 239—317 **2 Claims**

1. A shower head additive dispenser comprising an elongated, centrally bored tubular body member having an inlet end for connection to a shower water inlet pipe and an outlet end for connection to a shower head, so that water from the inlet tube to the shower head passes through the bore in the member;

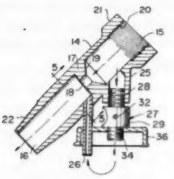
said bore being formed as an inlet portion and an outlet portion separated by a short, annular shoulder located roughly at the middle of the tubular member and with a small diameter opening forming the inner wall of the annular shoulder and connecting the inlet and outlet bore portions;

the central axis of said body member being arranged at an acute angle to the vertical, that is, sloped so that the outlet bore portion slopes and opens downwardly toward the shower head;

the shoulder having a transverse face at the inlet bore side thereof formed in an approximately truncated conical shape, with the small base thereof defining the edge of said small diameter opening,

the shoulder having a planar transverse face at the outlet bore side thereof;

a short inlet diversion tube, and a short outlet diversion tube, each having an upper end joined to the body member and opening into the bore therein, with the tubes



being vertically arranged and located at opposite sides of the shoulder and opening into the bore closely adjacent to the opposite sides of the shoulder and at an acute angle to the bore axis with said outlet tube opening directed toward the planar shoulder face;

and each tube having a lower end connected to a cap to which a container is removably fastened, with the lower ends of the two tubes thus communicating with the interior of the container;

and a manually operable control valve located within the tube which opens into the inlet bore portion for controlling the flow of water out of the inlet bore portion and into the container;

whereby bath oils and the like additives may be placed within the container and a controlled part of the water flowing through said body member may be diverted through the container, i.e., around the shoulder and back into the outlet bore portion, to pick up said additive and dispense same mixed with the water flowing through the shower head during operation of the shower.

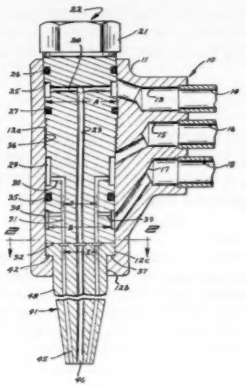
3,847,355

TORCH APPARATUS

John E. Smith, Lake Elmo, Minn., assignor to Tescom Corporation, Minneapolis, Minn.

Filed Dec. 5, 1973, Ser. No. 421,840
Int. Cl. B05b *7/06*
U.S. Cl. 239—424.5 **12 Claims**

1. Torch head apparatus comprising a torch head having an axially elongated torch head bore that at each end opens outwardly of the torch head, said torch head bore having a first bore portion opening outwardly of the torch head at one end and a reduced diameter bore opening at one end to the first bore portion to define a shoulder facing toward the first bore portion one end and opening at the other end outwardly of the torch head, an axially elongated torch tip having an enlarged diametric portion seatable against said shoulder and a tip portion extending through said reduced diameter bore portion and outwardly from the torch head, and a mixer removably mountable in the first bore portion, said mixer and torch tip having abuttable end surfaces, said mixer and torch head having cooperating means for retaining the mixer in abutting relationship with the torch tip to hold the torch tip against said shoulder, said mixer having a cutting oxygen passageway opening through said mixer surface and a plurality of preheat oxygen-fuel gas passageways opening through said mixer surface radially outwardly of the opening of the mixer cutting oxygen passageway through said mixer surface, said



torch head having passageways for conducting cutting oxygen, and preheat oxygen and fuel gas to the respective mixer passageway, and said tip having a cutting oxygen bore opening through said tip surface to the mixer cutting oxygen passageway and oxygen-fuel gas passageways opening to the mixer oxygen-fuel gas passageways.

ERRATUM

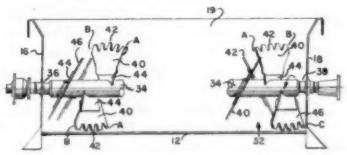
For Class 239—507 see:
Patent No. 3,847,159

3,847,356

SCRAPING PADDLES FOR UNLOADING AND SPREADING MECHANISM USED WITH MANURE SPREADERS

Allison W. Blanshine, Lititz, Pa., assignor to Sperry Rand Corporation, New Holland, Pa.

Filed May 29, 1973, Ser. No. 364,781
Int. Cl. A01c *23/00*
U.S. Cl. 239—662 **6 Claims**



1. A manure spreader comprising:

a wheeled frame;

an open ended spreader box mounted on said frame;

a conveying device operable with said spreader box to transport stored material along the length of said box to the open end of said box;

a means for unloading and spreading said stored material including a rotatable shaft mounted between the sidewalls of said spreader box and in the immediate vicinity of the opening included in said box, and paddles mounted on said shaft so that upon rotation of the shaft the paddles will move into the material being transported towards

said opening in the box by the conveying device and engage, shread and discharge said material from the box; a scraping means positioned on each side of said unloading and spreading means, said scraping means including at least one of said paddles mounted on said rotatable shaft of said unloading and spreading means and disposed adjacent the sidewalls of the spreader box, each of said paddles having a leading edge which moves closer to the adjacent sidewalls of the spreader box than the trailing edge during the rotation of said scraping means.

3,847,357

SEPARATION OF COPPER MINERALS FROM PYRITE

David Weston, 34 Parkwood Ave., Toronto, Ontario, Canada

Continuation of Ser. No. 115,709, Feb. 16, 1971, abandoned. This application June 27, 1973, Ser. No. 374,024

Int. Cl. B03b *1/04*

U.S. Cl. 241—20 **9 Claims**

1. A process for the separation of copper values from copper ores containing pyrite by differential flotation comprising; preparing a copper-pyrite flotation concentrate which is substantially free of slime host rock materials; grinding said copper-pyrite flotation concentrate in the presence of calcium hydroxide; agitation conditioning the thus produced pulp at a pH of at least 12.3 in the presence of a sulf-hydryl collecting agent for a period of time sufficient to depress the pyrite; and then subjecting the resulting pulp to flotation in the presence of a suitable frother to produce a copper concentrate enriched in copper values and impoverished in pyrite, and a tailings impoverished in copper values and enriched in pyrite.

3,847,358

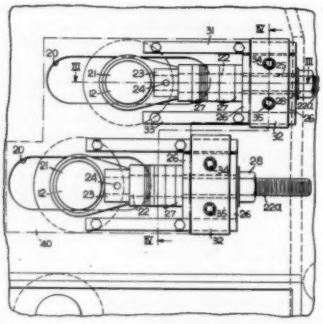
ADJUSTABLE AND YIELDABLE BREAKER BAR SUPPORTS FOR IMPACT CRUSHER

Keith B. Lowe, and William R. Gray, both of Appleton, Wis., assignors to Allis-Chalmers Corporation, Milwaukee, Wis.

Filed Jan. 16, 1974, Ser. No. 433,881

Int. Cl. B02c *13/31*

U.S. Cl. 241—32 **5 Claims**



1. An impact crusher having a housing enclosing a rotor carrying hammers arranged to strike and throw input material to disintegrate upon impact with target breaker bars spaced from the rotor, and an improved support assembly for each end of an adjustably positioned target breaker bar having end portions projecting through horizontally extended oblong openings in sidewalls of said housing; and said support assembly comprising:

a. an arm having a bushing at one end connected at a right angle to said projecting bar end portion, with an end of said arm opposite said bushing being threaded and projecting horizontally away from said rotor and beyond said sidewall opening;

b. a shear block with a central bore through which the threaded end portion of the arm projects;

c. a plurality of shims on said arm between said bushing and said shear block;

d. a threaded nut turned on the end of the arm projecting through the shear block and clamping said shims between said bushing and said shear block;

e. a channel fitted over the shear block, having an open end directed horizontally toward and attached to the adjacent housing sidewall to define a box surrounding and holding the shear block against rotation about the arm; and

f. a pair of parallel shear pins arranged in a vertical plane and on opposite sides of the arm, with each shear pin having its ends journaled in said box and a midportion thereof extending through a bore in the shear block to hold the shear block against axial movement within said box unless and until said shear pins are sheared by overload force applied to the supported target bar by such as uncrushable material.

3,847,359

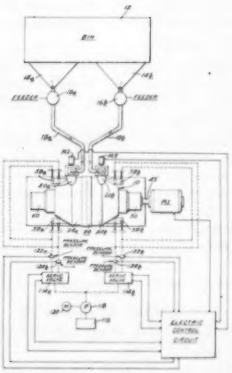
DISC TYPE REFINER WITH AUTOMATIC PLATE SPACING CONTROL

William S. Holmes, South Williamsport; Chester Donald Fisher, and Clifford D. Ihrig, both of Muncy, all of Pa., assignors to Sprout, Waldron & Company, Inc., Muncy, Pa.

Filed Dec. 14, 1973, Ser. No. 424,688

Int. Cl. B02c *7/14*

U.S. Cl. 241—34 **15 Claims**

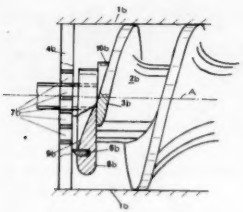


1. A disc type refiner for the refining of paper pulp and the like comprising a base, a rotor mounted for rotation on said base, a motor for driving said rotor in rotation, a refining surface on said rotor, a non-rotating head on said base, a refining surface on said non-rotating head in juxtaposed relation to said rotor refining surface, means for axially adjusting the position of said non-rotating head to control the spacing of said juxtaposed refining surfaces, feed means for introducing materials to be refined between said refining surfaces, means for monitoring the flow rate of material through said feed means, and means for continuously adjusting the spacing of said refining surfaces in accordance with the flow rate of material through said feed means to provide a constant work input to the material despite fluctuations in the material flow rate.

3,847,360
FOOD CHOPPER

Ludwig Seydelmann, N. Holderlinstrasse, 9, Stuttgart, Germany

Filed Nov. 1, 1972, Ser. No. 302,725
Int. Cl. B02c *18/18, 18/30, 18/36*
U.S. Cl. 241—82.5 7 Claims

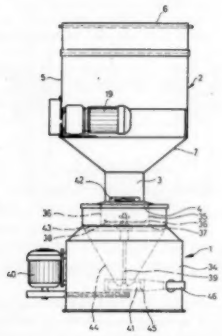


1. A food chopper comprising:
a housing having an elongated feed chamber;
a perforated plate defining one end of said chamber;
a conveyor in said chamber adjacent said plate having a surface directly juxtaposed with and inclined to said plate, said conveyor being rotatable in one sense such that said surface forces food against said plate;
a blade on said conveyor trailing said surface in said sense and sweeping over said plate on rotation for cutting food extending into said plate;
an auger having a worm and rotatable in said chamber about the same axis as said conveyor, said conveyor being between said auger and said plate; and
means for adjusting the extent of projection of said blade from said conveyor toward said plate.

3,847,361
COMMINUTOR FOR BULKY OBJECTS

Alois Heger, 7031 Oberjesingen, Wurtenberg, Germany

Filed Jan. 15, 1973, Ser. No. 323,925
Int. Cl. B02c *9/04*
U.S. Cl. 241—152 20 Claims

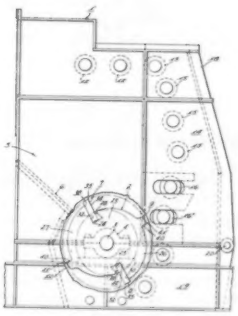


1. A comminutor for bulky objects, particularly objects of porous styrene, comprising a breaker unit having a housing provided with an inlet opening, an outlet opening, at least two transversely spaced parallel rotatable shafts, a plurality of breaker elements mounted on the respective shafts axially spaced therealong and for rotation therewith, a drive coupled with said shafts for rotating the same, and a plurality of projections each insertable between two axially consecutive breaker elements on the respective shafts to different selectable extents, so that objects entering through said inlet opening are broken up into fragments by cooperation of said breaker elements and projections; and a comminuting unit including a casing having an inlet communicating with said outlet opening for receiving said fragments therefrom and an outlet, a container provided with a plurality of apertures and accommodated in said casing intermediate said inlet and outlet thereof, and having a bottom wall, and at least one rotary cutter located within the confines of said container and extending substantially parallel to said bottom wall in close proximity thereof and being mounted for rotation with respect to said container so as to comminute said fragments and expel such comminuted fragments through said apertures to the exterior of said container from where they proceed.

3,847,362
ROTOR FOR IMPACT CRUSHER

Keith B. Lowe, and William R. Gray, both of Appleton, Wis., assignors to Allis-Chalmers Corportion, Milwaukee, Wis.

Filed Jan. 16, 1974, Ser. No. 433,883
Int. Cl. B02c *13/06, 13/28*
U.S. Cl. 241—191 4 Claims



1. A four hammer rotor for an impact crusher having a housing enclosing and supporting the rotor, a drive for turning the top of the rotor away from a material inlet opening in the housing, and target members spaced from the rotor opposite the inlet opening for disintegrating input material struck and thrown by the hammers to impact against the target members, with said rotor comprising:
a. an elongated central body portion with a pair of axially extending peripheral slots diametrically opposite each other and two diametrically opposed generally spiral body extensions each projecting progressively farther radially outward beginning at a location which is ahead of one slot in the direction of rotor rotation and reaches maximum radial projection at a terminus defining a face planar with the back wall of the other slot;
b. first and second hammer means each comprising a bar arranged in one of said slots and projectng outwardly thereof with a leading hammer face extending outwardly at least as far as the radially outer edge of said planar face; and
c. third and fourth hammer means located diametrically opposite each other and between the first and second hammer means, and with each of said third and fourth hammer means projecting from one of the rotor body spiral extensions with a leading surface radially shorter

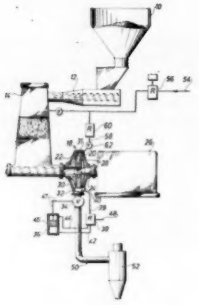
than the hammer faces of the first and second hammer means and having a flat portion substantially perpendicular to the periphery of the spiral extenson, and with the flat portion terminating with a radially outer edge which traces a common circle with radially outer edges of the first and second hammer means upon rotation of the rotor.

3,847,363

DEVICE IN GRINDING APPARATUS FOR VEGETABLE OR FIBROUS MATERIAL

Rolf Bertil Reinhall, 16, Killingevagen S-181, 64 Lindingo 3, Sweden

Filed Oct. 20, 1972, Ser. No. 299,259
Int. Cl. B02c *7/02, 7/17*
U.S. Cl. 241—245 **2 Claims**



1. A grinding apparatus comprising:
a. a housing;
b. a pair of grinding discs arranged within said housing defining between them a grinding space for defibering and refining fibrous vegetable material and the like:
c. means for introducing the raw material into said grinding space;
d. means for introducing a primary current of steam having a predetermined degree of pressure into said grinding space jointly with the raw material;
e. an outlet for the discharging of the heated material and steam from said housing;
f. means for introducing a secondary current of steam having a predetermined lower pressure than the pressure of said primary steam current directly into the housing;
g. valve means responsive to fluctuations in the pressure in said housing for regulating the rate of discharge of treated material and steam from said outlet.

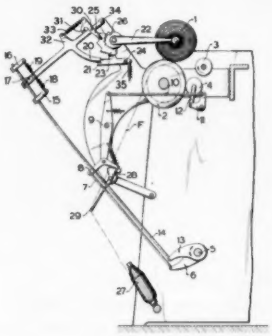
3,847,364

PATTERN DISRUPTION DEVICE FOR CROSSWINDING MACHINES

Joachim Rohner, Rheydt; Wilhelm Maassen, Monchengladbach, and Egon Haberkorn, Leusel, all of Germany, assignors to W. Schlafhorst & Co., Monchengladbach, Germany

Filed June 5, 1972, Ser. No. 259,588
Claims priority, application Germany, June 12, 1971, 2129318
Int. Cl. B65h *54/38*
U.S. Cl. 242—18.1 **3 Claims**

1. In a crosswinding machine, a pattern disruption device, comprising means supporting a crosswinding spool, a rotational member in frictional contact with said spool for effective rotation of said spool, means for intermittently driving said rotational member, and contact varying means for varying the magnitude of the frictional contact between said crosswinding spool and said rotational member while maintaining continuous physical contact between said crosswinding spool and said rotational member, synchronizing means operable to provide that the intermittent drive of said rotational member by said drive means occurs in a predetermined time relationship with the variation in magnitude of the frictional contact



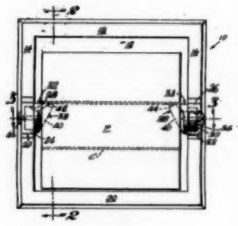
between said spool and said rotational member, wherein said synchronizing means operate in counter synchronism so that the magnitude of the frictional contact between said spool and said rotational member increases when said intermittent drive of said rotational member has been interrupted and decreases when said intermittent drive of said rotational member has been restored.

3,847,365

RIGID MEANS TO SUPPORT A ROLL OF TOILET PAPER ON A DISPENSER BRACKET

Jose M. Carol, 1901 N.W. N. River Rd., Miami, Fla. 33125

Continuation-in-part of Ser. No. 107,971, Jan. 20, 1971, abandoned. This application Oct. 18, 1972, Ser. No. 298,605
Int. Cl. A47k *10/16, 10/22*
U.S. Cl. 242—55.2 **5 Claims**



1. Support means for dispensing paper from a roll of toilet paper comprising,
a rigid wall receptacle adapted to be mounted to a wall and having a front opening mouth sized to receive a portion of a conventional size toilet paper roll therein oriented in an attitude with the axis of the roll extending laterally of the mouth,
an outwardly extending rigidly supported arm extending outwardly of the receptacle on opposite sides of the mouth,
a short peg rigidly carried on each of the arms, said pegs being in confronting relation, and defining a support axis for the roll,

each peg being beveled to a distal end of reduced cross section relative to the cross section of the proximal end of said peg,

the terminal ends of said pegs being spaced apart a distance somewhat less than the axial length of a roll of toilet paper, and

the proximal ends of said pegs being permanently spaced apart a distance greater than the width of a roll of toilet paper, and

said pegs defining a cam surface between their respective terminal and proximal ends, and

said pegs being of rigid material to inwardly deform at least one end of a roll of toilet paper forceably wedged between the distal ends of the pegs and into the mouth to be nested in said receptacle and rotatably supported and captivated on said pair of pegs until the diameter of the roll is reduced upon dispensing the paper,

said dispenser receptacle, rigid support arms and said pegs being formed as an integral unit.

3,847,366

PROCESS FOR THE PREPARATION OF WINDING OPERATIONS AND FOR THE REMOVAL OF ROLLS FROM A WINDING MACHINE

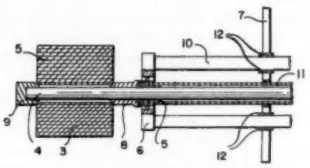
Willi Johann Schmidt, Hahn/Taunus, and Hugo Lumb, Heidesheim, both of Germany, assignors to Kalle Aktiengesellschaft, Wiesbaden, Germany

Continuation-in-part of Ser. No. 166,942, July 28, 1971, abandoned. This application July 5, 1973, Ser. No. 376,591

Claims priority, application Germany, July 29, 1970, 2037623

Int. Cl. B65h *19/02*

U.S. Cl. 242—68.3 **2 Claims**



1. A process for preparing for winding operations which comprises axially displacing a winding shaft a predetermined distance in the direction of the winding area, pushing a winding core onto the winding shaft, securing the winding core against lateral slippage on the winding shaft, and further moving the winding core into final winding position in the winding area.

3,847,367

SAFETY BELT REEL WITH BRAKE

Walter Fieni, Paris, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

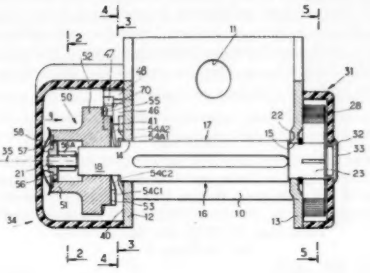
Filed Mar. 26, 1973, Ser. No. 345,121

Claims priority, application France, Mar. 27, 1972, 72.10664

Int. Cl. B65h *75/48*

U.S. Cl. 242—107.4 **8 Claims**

1. A strap reeling device comprising a frame, a shaft rotatably mounted on said frame, a strap having one extremity attached to said shaft, a biasing spring arranged to bias said shaft in a direction to reel-in said strap, a wheel slidably mounted on said shaft and rotatable therewith, locking teeth on said wheel, matching locking teeth on said frame disposed for engagement by the locking teeth on said wheel, a dog pivotally mounted on said frame and normally interposed between said wheel and frame so as to prevent engagement between said locking teeth on said wheel and said matching locking teeth on said frame thereby to accommodate predetermined reeling out of said strap from an initial wound condition, biasing means reacting between said frame and said wheel and arranged to urge said wheel in an axial direction toward said frame in such manner as to urge said locking teeth toward locking engagement with said matching locking teeth,



and camming means on said wheel engageable with said dog and operable to move said dog from its normal position between said wheel and frame thereby to cause engagement of said locking teeth with said matching teeth and to effect locking of said shaft against reeling out in coordination with predetermined rotation of said wheel in its reel-in direction by said biasing spring following reeling out of a predetermined portion of said strap and relaxation of reel-out tension therein.

3,847,368

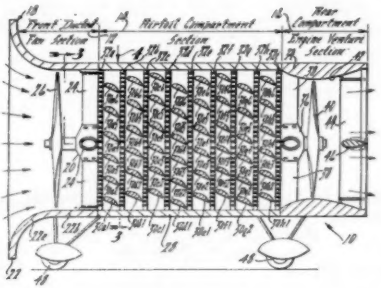
LIFT CELL

Joseph A. Sakal, Jr., 7626 Barnsbury Dr., Union Lake, Mich. 48085

Filed Jan. 4, 1973, Ser. No. 320,886

Int. Cl. B64c *15/00*

U.S. Cl. 244—13 **2 Claims**



1. In a lift cell having a horizontal longitudinal axis, the combination comprising a straight longitudinally extending enclosure means open at both longitudinal ends, an airfoil section comprising a plurality of airfoils distributed in an array within said enclosure means, each airfoil being disposed in the path of airflow through said enclosure means and being shaped such that longitudinal airflow past the airfoil creates a pressure differential acting on the airfoil to produce lift, and a ducted fan section at the forward end of said enclosure means for drawing air into said enclosure means and forcing

the same through said enclosure means and across the airfoils of said airfoil section to thereby impart lift to each airfoil and hence to the lift cell, said ducted fan section including additional enclosure means continuing longitudinally forwardly from the forward end of said first-mentioned enclosure means, said additional enclosure means having a straight cylindrical section extending forwardly from the forward end of said first-mentioned enclosure means and a flared section flaring radially outwardly in the forward direction from the forward end of said straight cylindrical section, said flared section being shaped to form a contoured aerodynamic surface via which a longitudinally forward thrust is imparted to the lift cell when the ducted fan section is operated to draw air into and through said two enclosure means.

3,847,369

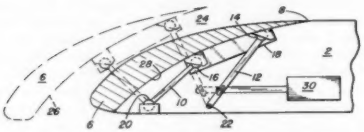
CONTROL SURFACE DEPLOYMENT MECHANISM

Jack C. Phillips, St. Louis, and Donald E. Bennett, Ferguson, both of Mo., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Mar. 8, 1973, Ser. No. 339,494

Int. Cl. B64c 9/14

U.S. Cl. 244—42 R **6 Claims**



1. An airfoil for use with an aircraft, said airfoil comprising:

a wing, said wing having a maximum chord length at the root chord, the chord length decreasing in the outboard direction;

a slat, having a trailing edge, mounted on said wing and adapted to act as a portion of the outer surface of said wing when in a first stowed position; and

means for moving said slat in a streamwise parallel direction to a second extended position, in which position the trailing edge of said slat overlaps said wing to form a nozzle between said slat and said wing, said slat having the shape of a wedge when viewed from above the wing, the flare of the wedge being configured to provide, at all points, a constant percentage of overlap distance to root chord length and of the extent of the throat of the nozzle to root chord length.

3,847,370

TUBE SERVICING DEVICE

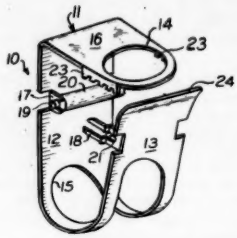
Harvey J. Engelsher, Yonkers, N.Y., assignor to Horizon Industries, Ltd., Bronx, N.Y.

Filed Feb. 16, 1972, Ser. No. 226,782

Int. Cl. F16k 7/06

U.S. Cl. 251—6 **2 Claims**

1. A tube servicing device which comprises a frame having a pair of oppositely disposed resiliently flexible legs and a pair of apertures defining an opening to accommodate the lengthwise captive extension between and through said legs of a flexible tube to be serviced, a pair of rollers each connected to a corresponding leg of said frame for rotation relative thereto, said rollers being disposed to pinch the tube when said legs are pushed together and for movement with the frame in pinching rolling contact engagement with the tube to expel by squeegee action material within the tube over the length traversed, guide means on said frame operable to constrain said legs for movement together along a predetermined path and with said rollers held substantially parallel to each other, and catch means on said frame operable to engage the end of one of said legs to selectively retain said legs in a pushed together configuration, said guide means including brackets which support said rollers and have open-ended slots,



the slots of the brackets supporting one roller being disposed to engage the opposing roller structure to constrain the movement of said legs when same are pushed together.

3,847,371

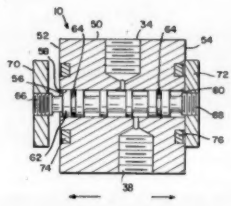
SPOOL VALVE

Orien K. Norton, 2011 Elizaville Rd., Lebanon, Ind. 46052; David E. Grimes, 26 Del Mar Dr., Crawfordsville, Ind. 47933, and Ralph A. Sayler, P.O. Box 98, New Market, Ind. 47965

Filed Oct. 30, 1972, Ser. No. 302,113

Int. Cl. F16k 31/08

U.S. Cl. 251—65 **6 Claims**



1. In a valve wherein the valve has a body with opposite end walls and a bore extending through said body from one end wall to the other with bore openings in said end walls, and an elongated valve spool carried within and longitudinally reciprocable in said bore between operative positions, the improvement comprising an armature carried by each end of said valve spool externally of any fluid chamber, and a magnet secured in each of said end walls externally of any fluid chamber and in a position to attract the adjacent armature.

3,847,372

DRILLING FLUID SAVER AND SAFETY VALVE

Mason Rawleigh Litchfield, Houston, Tex., assignor to Smith International, Inc., Midland, Tex.

Filed Feb. 26, 1973, Ser. No. 335,489

Int. Cl. F16k 31/54

U.S. Cl. 251—248 **9 Claims**

1. Drilling fluid saver valve assembly comprising:

a tubular body having a flow axis;

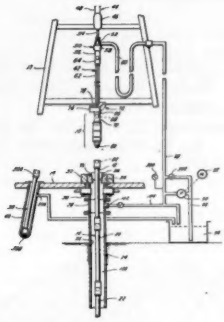
valve closure means mounted within said tubular body for rotation about an axis transverse to said flow axis between an open position permitting fluid flow through said tubular body along said flow axis and a closed position pre-

venting fluid flow through said tubular body along said flow axis;

actuator means rotatable around said flow axis;

drive means connecting said actuator means to said closure means for rotating said valve closure means between said open and closed positions when said actuator means is turned about said flow axis between predetermined positions; and

torque means for transmitting torque between said actuator means and said tubular body about said flow axis, said torque means including a portion carried by said actuator means and a portion carried by said body, said portions being engageable in one relative position of said body and



closure means to transmit torque in one direction about said axis and being engageable in another relative position of said body and closure means to transmit torque in the opposite direction about said flow axis, said positions being azimuthally separated by an amount equal to the azimuthal travel of said actuator means relative to said body required to move said closure means between open and closed positions,

said torque means being independent of said drive means, whereby torque can be transmitted between said actuator means and said tubular body without passing through said drive means, thereby avoiding torque strain on said drive means except when the closure is being moved between said open and closed positions.

3,847,373

LOUVER VALVE

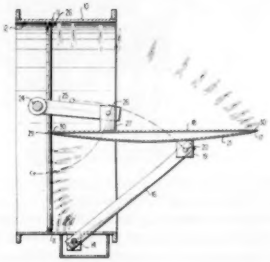
Donald K. Hagar, Macungie, Pa., assignor to Mosser Industries, Incorporated, Allentown, Pa.

Filed June 26, 1973, Ser. No. 373,797

Int. Cl. F16k *31/52*

U.S. Cl. 251—298 **11 Claims**

1. A louver valve comprising a valve casing having an axis in the direction of the flow of fluid through the valve; a circuitous valve seat protruding from the inner wall of the casing, said seat lying in a plane that is substantially perpendicular to the axis of the casing; a drive shaft journaled in the interior of the casing to one side of the plane of the valve seat; a second shaft journaled in the interior of the casing on the opposite side of said plane of the valve seat from the drive shaft, the line of centers between the axis of said drive shaft and the axis of said second shaft being diagonal to the axis of the casing; a drive arm extending radially from said drive shaft; a slave arm extending radially from said second shaft; a louver positioned within the casing to one side of the plane of the valve seat for opening and closing the valve cooperatively with said seat said louver having a front surface which faces the seat when in closed position, and a rear surface which is opposite the front surface, said front surface of said louver being pivotally connected to the arm of the shaft which is on the opposite side of the plane of the valve seat from the louver, said rear surface of said louver being pivotally connected to the arm of the other shaft; the axes of said drive shaft, said second shaft, said front surface pivot, and said rear surface pivot being substantially parallel to one another and to the plane of the valve seat, said axes lying in longitudinal planes that are substantially parallel to the axis of the casing, said interconnection of said shafts, arms, and louver constituting a four bar linkage that is so arranged that when the drive shaft is rotated in one direction the slave arm rotates in the opposite direction, and that when the valve is in the closed position said longitudinal plane (a) of the axis of the front surface pivot lies in the space between (b) said longitudinal plane of the axis of the rear surface pivot and (c) said longitudinal plane of the axis of that shaft which is positioned on the same side of the valve seat as



the louver (hereinafter the "louver side shaft"), said (a) also lying in the space between said (c) and (d) said longitudinal plane of the axis of the shaft that is positioned on the opposite side of the seat from the louver (hereinafter the "non-louver side shaft"), the distance between the axis of the non-louver side shaft and the axis of the front surface pivot being equal to or greater than the sum of (e) the distance between the axis of the non-louver side shaft and the plane of the valve seat and (f) the distance between the axis of the front surface pivot and that edge of the louver which is closest to the plane of the valve seat when the louver is in the open position; the length of the arm of the non-louver side shaft being sufficiently shorter than the distance between the axes of the two said shafts that the louver can be moved from its closed position to an open position where the louver is substantially parallel to the axis of the casing by rotating the drive shaft.

3,847,374

DISASSEMBLABLE VALVE

Herbert Tittelbach, 32 Hauptstr., D-4307 Kettwig/Ruhr, Germany

Filed Feb. 6, 1973, Ser. No. 330,066

Claims priority, application Germany, Feb. 7, 1972, 2205620

Int. Cl. F16k *1/04*

U.S. Cl. 251—367 **11 Claims**

1. A disassemblable valve assembly, comprising:

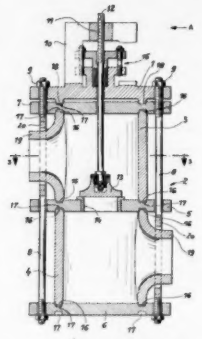
a. a housing including

1. at least two separately prefabricated tubular portions each defining a fluid flow passage and each having a pair of opposed, flangeless, conically tapered opening edge portions defining tongues, at least one of said portions being a T-shaped portion having an access sleeve located between said edge portions and defining a flow path into the interior of said T-shaped portion,

2. a spacer plate disposed between said tubular portions, said spacer plate having a valve seat formed therein and defining a fluid passage between said tubular portions,

3. a base plate supporting at least one of said tubular portions; and
4. said spacer plate and said base plate being formed with annular grooves on the sides thereof facing said tongues, said grooves and tongues having corresponding profiles;

b. bolt means releasably fastening together said tubular portions, said spacer plate and said base plate with each



said groove receiving and forming a fluid-tight seal with, a respective tongue, at least one of said bolt means comprising an annular member enclosing said access sleeve, said annular member and said sleeve defining in assembly a clearance space; and

c. a valve stem mounted to extend in a sealing manner into one of said tubular portions, said valve stem including a valve disc engageable with said valve seat of said spacer plate.

ERRATA

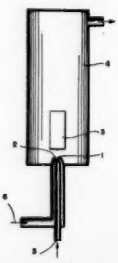
For Classes 88—000 thru 175—700 see:
Patents Nos. 3,847,376 thru 3,847,378

3,847,375

METHOD AND APPARATUS FOR MIXING LIQUIDS

Heribert Kuerten, Mannheim, and Otto Nagel, Neustadt, both of Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed Oct. 12, 1972, Ser. No. 297,030
Int. Cl. B01f *5/02*
U.S. Cl. 259—4 **11 Claims**



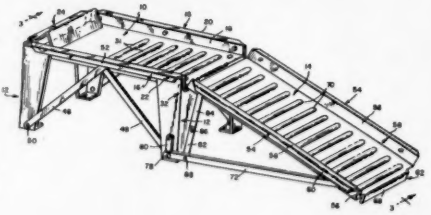
1. A method of rapidly mixing liquids which differ greatly from one another as regards volume and/or density, to form dispersions, emulsions or homogeneous mixtures, wherein one or more jets of a first liquid are passed through a nozzle or nozzles at a velocity of from 5 to 100 m/s into an impulse exchange chamber open at both ends, which is located in a liquid medium, extends longitudinally in the direction in which the jet or jets enter said medium and has a volume equal to one hundredth to one ten-thousandth of the volume of a vessel containing said medium, together with a second liquid to be dispersed, emulsified or mixed with said first liquid, which latter liquid is ejected in the immediate proximity of the orifice of the nozzle providing the propulsive jet, the average hydraulic diameter of the impulse exchange chamber being equal to from two to 20 times the diameter of a theoretical, single nozzle which is equal in cross-sectional area to all of the nozzle orifices present, and its length being equal to from two to 30 times the hydraulic diameter.

3,847,376

PORTABLE VEHICLE RACK

Kenneth W. Binding, Woburn, Mass., assignor to Beatrice Foods Co.,, Chicago, Ill.

Filed Sept. 22, 1972, Ser. No. 291,265
Int. Cl. E02c *3/00;* **G08b** *7/00*
U.S. Cl. 254—88 **9 Claims**



1. A portable vehicle rack comprising a horizontally disposed rack plate reinforced by stiffening means at its longitudinal edges comprising guides at the longitudinal edges, support legs at the corners of the rack plate, diagonally disposed braces connecting the lower ends of the legs to the rack plate, an inclined ramp detachably connected at one end to one end of the ramp plate and adapted to rest at its other end on the floor, and a signalling device for indicating that a vehicle wheel has reached the ramp plate comprising an arm pivotally supported below the rack plate, said arm having bent portion extending upwardly therefrom through a hole in the ramp plate, said arm in repose being adapted to be disposed at right angles to one of the longitudinal sides of the rack plate with the bent portion extending upwardly through the hole, in which position the arm inclines downwardly from its pivot and being adapted to be raised to a horizontal position by pressure of the wheel on the bent portion of the arm as it moves onto the ramp plate, and a flag on the arm.

3,847,377

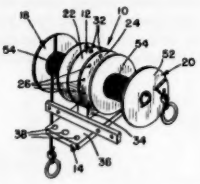
SAFETY LOWERING DEVICE

Clarence D. Byrd, Colfax, N.C., assignor to Safety Devices Incorporated, Welcome, N.C.

Filed June 7, 1973, Ser. No. 367,732
Int. Cl. A62b *1/12*
U.S. Cl. 254—158 **9 Claims**

1. Apparatus for controlling the rate of descent of a load comprising, a rotatable shaft, a drum mounted upon said shaft for rotation therewith to wind or pay out a line attached to the drum, support means, a fluid-filled, sealed housing assembly mounted upon said support means, said housing assembly rotatably supporting said shaft, rotor means, including a plu-

rality of vanes, attached to said shaft for rotation therewith and vane engaging cam means projecting within a segment of less than 90° within said housing assembly for displacing said



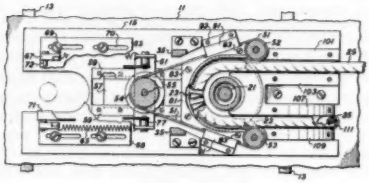
vanes relative to said rotor means upon rotation thereof whereby said vanes are projected radially substantially the same extent during rotation of said rotor means until engagement with said vane engaging cam means.

3,847,378

POWER CAPSTAN FOR ANCHOR ROPE AND THE LIKE

Leonhard J. Roemer, Jr., 27 Forgham Rd., Rochester, N.Y. 14616

Filed July 27, 1973, Ser. No. 383,442
Int. Cl. B66d *1/72*
U.S. Cl. 254—175.7 5 Claims



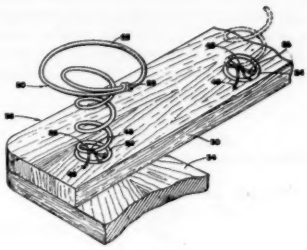
1. Power mechanism for moving an anchor rope of a boat longitudinally by motor power when desired and for allowing free running of the rope longitudinally to permit rapid fall of an anchor attached to the rope when desired, said mechanism comprising a power shaft, a capstan pulley rotatable on said shaft, said capstan pulley having a circumferential groove in which the rope is received throughout a substantial part of the circumference of the capstan pulley, a belt encircling part of the circumference of the capstan pulley and tending to press the rope into said groove, engageable and releasable clutch means for operatively connecting said capstan pulley to said power shaft, means for applying power to said shaft to turn said shaft and said capstan pulley with it while said clutch means is engaged and while said belt presses the rope firmly into said groove, thereby to produce powered longitudinal movement of the rope, a shiftable idler pulley over which the belt runs, spring means tending to shift said idler pulley in a direction to tighten said belt, two members pivoted to each other to form a toggle effective, when straightened, to shift said idler pulley in an opposite direction against the force of said spring means, to loosen said belt, a clutch shifting lever overlying said toggle, and a toggle control member connected to a mid-joint of said toggle and overlying said shifting lever, the parts being so shaped and proportioned that when said shifting lever moves downwardly it disengages said clutch means and concomitantly presses downwardly on the toggle to straighten it, and when said lever moves upwardly it engages said clutch means and concomitantly pulls upwardly on the mid-joint of the toggle to displace it from a straight line position so as to allow said spring means to tighten the belt.

3,847,379

UPHOLSTERY SPRING COIL

Walter Stumpf, Munster, Ind., assignor to Simmons Company, New York, N.Y.

Continuation of Ser. No. 829,533, June 2, 1969, abandoned.
This application Jan. 18, 1972, Ser. No. 218,842
Int. Cl. F16f *3/04*
U.S. Cl. 267—91 4 Claims



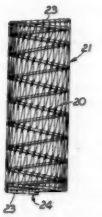
1. A helical wire coil compression spring for box springs or the like comprising a plurality of convolutions having a helical pitch substantially greater than the thickness of the wire, the end convolutions thereof being substantially normal to the axis of the helix and one of them terminating in a wire portion extending as a chord across the said one end convolution.

3,847,380

DYE SPRING CENTRES

Henry Michael Kearns, "Irgwin" Dumbah Ln., Macclesfield, Great Britain

Filed Feb. 20, 1973, Ser. No. 334,106
Claims priority, application Great Britain, Feb. 25, 1972, 8752/72
Int. Cl. F16f *1/12*
U.S. Cl. 267—179 6 Claims



1. An end adapter for a dye spring centre having a terminal helix comprising: a centrally apertured end disc having at one side thereof a pair of concentric flanges defining between them an annular channel for reception therein of the terminal helix of the dye spring centre, a series of spaced-apart locating protrusions disposed in the channel and having progressively increasing effective height for engagement with corresponding portions of the terminal helix of the dye spring between adjacent lacings therearound for locating the end disc in a plane to which the axis of the dye spring centre is perpendicular.

3,847,381

PNEUMATIC VISE WITH HIGH CLAMPING FORCE

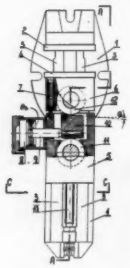
Antonino Riggio, Corso Perrone, 4, 16152 Genova-Cornigliano, Italy

Filed Oct. 18, 1972, Ser. No. 298,598

Claims priority, application Italy, Oct. 26, 1971, 13006/71; Sept. 7, 1972, 12880/72

Int. Cl. B25b *1/18*

U.S. Cl. 269—32 **1 Claim**



1. A clamping device for exerting substantially large working forces to hold a workpiece, comprising, in combination, a plate, a fixed clamping member and a movable clamping member between which said workpiece is held; a support member for supporting said movable clamping member; a pneumatic piston and stationary cylinder on said support member; a wedge member connected to said piston, said wedge member moving said movable clamping member toward said fixed clamping member when said pneumatic piston is actuated within said stationary cylinder, the working force moving said movable clamping member being inversely proportional to the tangent of the angle of the vertex of the wedge of said wedge member; spring means uring said movable clamping member toward said support member, said wedge member being secured to an end of the piston and being located between said support member and said movable clamping member, said wedge member moving said movable clamping member away from said support member against the bias of said spring means when said piston is actuated, said piston and wedge member moving along a path of travel perpendicular to the path of travel of said movable clamping member; a first roll member rotatable on said movable clamping member with axis of rotation movable with said movable clamping member; a second roll member rotatable on said support member, the axis of rotation of said second roll member being stationary, said wedge member being movable by said piston between said first and second roll members for rotating said roll members when said movable clamping member is forced against said fixed clamping member; adjusting screw means on said plate and connected to said movable clamping member and said support member for moving said movable clamping member and said piston and wedge member, said movable clamping member being movable by said piston and wedge member relative to said screw means, when said screw means is stationary.

3,847,382

CARD HANDLING APPARATUS

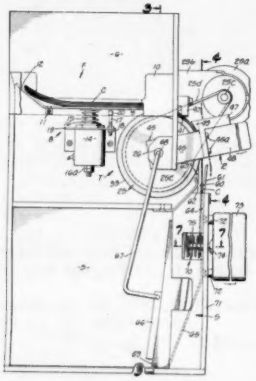
James W. McKee, Corona del Mar, Calif., assignor to True Data Corporation

Filed Nov. 15, 1971, Ser. No. 198,722

Int. Cl. B65h *3/34, 29/42*

U.S. Cl. 271—4 **18 Claims**

1. In data card handling apparatus comprising a card feeding station adapted to receive a stack of cards, a reading station having means for reading the cards, a receiver for cards which have been read, transport means for moving cards successively from said feeding station past said reading station to said receiver, and drive means for said transport means, said feeding station having card aligning means engageable by the side edges of the cards in said stack for aligning the cards with said means for reading the cards, and jostling means for agitating the cards, said jostling means including a plate engageable with the stack of cards, said plate extending on a plane normal to said card aligning means, means mounting said plate for card agitating movements, and actuator means



for moving said plate towards and away from said stack of cards independently of said drive means, means providing an inclined surface remote from said transport means to feather the stack of cards with the leading edge of the card adjacent to said plate nearest said transport means, and means operable in response to each movement of said plate away from said stack of cards to effect engagement of said leading edge of successive cards by said transport means and transport of the successive cards from said feeding station past said reading station.

3,847,383

DOCUMENT FEEDING DEVICE

Edward A. Wojtowicz, Bryn Mawr; S. James Lazzarotti, Broomall; James R. Hunter, Chadds Ford, and Robert W. Rodkey, Exton, all of Pa., assignors to Burroughs Corporation, Detroit, Mich.

Filed Nov. 30, 1973, Ser. No. 420,718

Int. Cl. B65h *5/08*

U.S. Cl. 271—11 **9 Claims**

1. A document feeding device comprising:

a feeder vacuum chamber operatively connected to generate an area of low atmospheric pressure adjacent a face portion thereof,

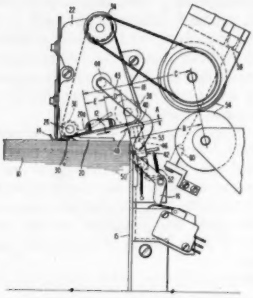
at least a single moving perforated feed belt operatively connected to contiguously traverse said face portion of said feeder vacuum chamber,

a registration wall situated in predetermined angular relationship to the face portion of said feeder vacuum chamber for enabling substantial alignment of the forward edges of the documents prior to their being fed,

a gate member pivotally mounted to provide a substantially coplanar extension of said registration wall, the face portion of said gate member being positioned in close proximity to said moving feed belt and forming therewith a channel through which said documents to be fed are driven by said belt, said gate member acting as a barrier restraint upon a double document to impede its exit from the feeder,

said gate member including additional vacuum chamber means operatively connected to generate an area of low

atmospheric pressure adjacent its face portion, the gate member vacuum force acting as a frictional restraint upon said double document to impede its exit from the



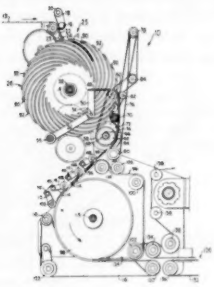
feeder, said barrier and frictional restraints being exerted concurrently on said double document by said gate member to effectively prevent the untimely feeding of said double document.

3,847,384

APPARATUS FOR COLLATING SHEET LIKE ELEMENTS

Erwin Bethke, Erkelenz-Keyenberg, Germany, assignor to F. L. Smithe Machine Company, Inc., Duncansville, Pa.

Filed Jan. 30, 1973, Ser. No. 328,135
Int. Cl. B65h *29/66*
U.S. Cl. 271—80 **8 Claims**



1. Apparatus for collating sheet like elements comprising,

first conveyor means for conveying a plurality of sheet like elements in spaced tandem relation at a first preselected linear speed,

second conveyor means for conveying said sheet like elements in lapped relation as a continuous stream for further processing at a second preselected linear speed, said second conveyor means spaced from said first conveyor means,

a collator mechanism positioned adjacent the discharge end of said first conveyor means, said collator mechanism including a plurality of circular spaced disc members having spaced arcuate slots therein, said slots having a configuration of a segment of a spiral,

said plurality of spaced disc members coaxially mounted on a shaft for rotational movement therewith at a preselected peripheral velocity,

means for rotating said plurality of spaced disc members at a higher speed than said first preselected linear speed of said first conveyor means,

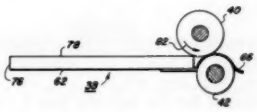
stop plate means arranged between said plurality of spaced disc members, said stop plate means terminating within the periphery of said circular spaced disc members, and said collator mechanism arranged to receive said sheet like elements in spaced tandem ralation from said first conveyor means at a first preselected linear speed and said stop plate means arranged to arrest the circular movement of said sheet like elements and move said sheet like elements radially outwardly in said spaced arcuate slots and along the surface of said stop means at a decelerating linear speed to discharge said sheet like elements in lapped relation as a continuous stream at a reduced linear velocity to said second conveyor means for further processing.

3,847,385

SHEET CONTAINER

Francis J. Wieloch, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 13, 1972, Ser. No. 306,270
Int. Cl. B65h *3/06, 1/04*
U.S. Cl. 271—121 **5 Claims**



1. An apparatus for separating and feeding successive single sheets from a stack of sheet material, including:

a rotary driven feed roll, said feed roll being adapted to engage the upper surface of successive uppermost sheets in the stack of sheet material;

a retard roll cooperating with said feed roll for seriatim feeding of successive uppermost sheets from the stack;

a base plate defining a generally planar surface for supporting the stack; and

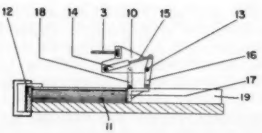
a flexible sheet having one marginal edge portion thereof secured to the leading edge portion of said base plate, said flexible sheet extending in a substantially outwardly direction beyond said base plate and being interposed between said feed roll and said retard roll such that a portion of the upper surface thereof engages the undersurface of successive uppermost sheets advancing from the stack disposed on said base plate.

3,847,386

DEVICE FOR EXACT ANGLE-POSITIONING OF PAPER PILES IN PAPER CUTTERS

Fritz Kruse, Hannover-Langenhagen, Germany, assignor to H. Wohlenberg Kommanditgesellschaft, Hannover, Germany

Filed Dec. 4, 1970, Ser. No. 95,315
Int. Cl. B65h *31/34, 7/08*
U.S. Cl. 271—171 **1 Claim**



1. A device for the accurate positioning of a paper stack in a paper cutting machine, said device including generally hori-

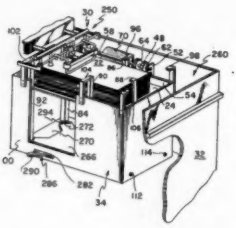
zontal first support means supporting said stack, generally vertical second support means extending along one extremity of said first support means, a pair of spaced apart parallel stationary guide rails extending perpendicular to said second support means and positioned above the level of said first support means, a movable rail extending between said fixed rails and being perpendicular thereto, said movable rail being located at the height of said fixed rails and having means slidably securing it to each of said fixed rails for slidable movement therealong, and stack positioning means having means slidably securing it to said movable rail for sliding movement therealong between said fixed rails, said stack positioning means including thrust means extending down from the height of said movable rail, said thrust means having a pressure plate extending generally downwardly and pivotally mounted for movement in the direction of said stack to exert a force against said stack in a direction toward said second support means to urge said stack against said second means, and means for causing said pressure plate to move and exert said force.

3,847,387

ADJUSTABLE PAPER STACK GUIDE APPARATUS

Milton W. Sick, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Continuation of Ser. No. 203,959, Dec. 2, 1971, abandoned.
This application Apr. 9, 1973, Ser. No. 349,522
Int. Cl. B65h *1/04*
U.S. Cl. 271—171 **7 Claims**



1. Apparatus for operatively positioning any of a plurality of different width stacks of sheet material on a supporting platform to enable the feeding of sheets therefrom, said apparatus comprising:

a. a first elongated guide member operatively associated with such supporting platform and being of uniform cross-section and mounted for rotation about an axis which is parallel to and displaced from the length centerline of said first guide member and which is perpendicular to such supporting platform,

said first guide member having a plurality of engaging means, at least two of which are at differing distances from said axis, (1) for engaging the lateral side of a stack, positioned on such platform, at more than one spaced line of contact to prevent rotation of the first guide member about its axis when one of the engaging means is in engagement with the lateral side of the stack, and (2) for guiding the sheets from such positioned stack during feeding;

b. a second elongated guide member operatively associated with such supporting platform and being similar to said first guide member and mounted for rotation about an axis which is parallel to and displaced from the length centerline of said second guide member and parallel to the length centerline of said first guide member,

said second guide member having a plurality of engaging means, at least two of which are at differing distances from said axis, (1) for engaging the lateral side of a stack, positioned on such platform, at more than one spaced line of contact to prevent rotation of the second guide member about its axis when one of the engaging means is in engagement with the lateral side of the stack, and (2) for guiding the sheets from such positioned stack during feeding;

c. means operatively coupling said first and second guide members for synchronous rotational movement about the rotational axes thereof to change, by the same amount, the effective distance of the engaging means of said first and second guide members from an imaginary first plane, said first plane being parallel to said axes and to the direction of such feeding of sheets, and equidistant from said axes,

said effective distance being the perpendicular distance between said first plane and imaginary planes lying tangent to the facing engaging means of said first and second guide members, and parallel to said first plane; and

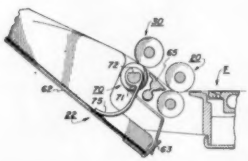
d. means for otating said first and second guide members to determine said effective distance in accordance with any such width.

3,847,388

SHEET STACKING METHOD AND APPARATUS

Thomas Lynch, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 20, 1972, Ser. No. 317,028
Int. Cl. B65h *29/22, 31/34*
U.S. Cl. 271—174 **9 Claims**



1. A sheet propelling and aligning device comprising:

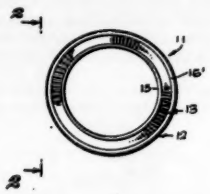
a sheet collecting tray, said tray including a base means for supporting said sheets and a stop means extending upwardly of said base means;

a rotating means positioned over said tray and said base means for advancing said sheet in a first direction over and past said stop means and into said tray, said rotating means further including propelling means for contacting a downwardly facing side of said sheet during advancement of said sheet in said first direction and for then contacting an upwardly facing side of said sheet delivered into said tray for propelling the entire sheet in a second direction different from said first direction to align said sheet in said tray against said stop means, said propelling means comprising at least one resilient blade member arranged to provide said contact with said upwardly and downwardly facing sides of said sheet and to turn with said rotating means, and extending outwardly of said rotating means in a generally radial direction, said blade member being of sufficient length to contact said base means when no sheets are supported thereon.

3,847,389
LOW-FRICTION SEAL

William A. Rogers, Costa Mesa, Calif., assignor to Tanner Engineering Co., Wilmington, Calif.

Continuation of Ser. No. 783,868, Dec. 16, 1968, abandoned.
This application July 22, 1971, Ser. No. 165,409
Int. Cl. F16j *15/32, 9/00*
U.S. Cl. 277—153 4 Claims

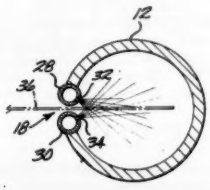


1. A composite seal ring comprising:
an annular flexible jacket having a substantially U-shaped cross section defining a first bottom wall member and second and third flat surfaced wall members attached to opposite ends of said first wall member, said third wall member adapted to seal against an external surface; and an annular resilient member having a circular cross section located within said jacket and contacting opposing inner flat parallel surfaces of the second and third wall members inwardly of their free edges, the thickness of the first wall member and the second and third wall members being relatively thin with respect to the diameter of the circular cross section of the annular resilient member, said annular resilient member contacting the inside surface of said second wall member and said surface of said third wall member intermediate the free end of the third wall member and the first wall member for bending of the third wall member, said third wall member having a flat outer surface sloping from said bottom wall outwardly and away from said second wall whereby said third wall member has a thickness that varies from a maximum at the free end thereof to a minimum in the area of its connection to said first wall member and thus providing a flat sealing surface on the third wall member between the region of its contact with said annular resilient member and its free end.

3,847,390
PNEUMATIC SHEET CONVEYOR

John Allen Dixon, Valliant, Okla., assignor to Weyerhaeuser Company, Tacoma, Wash.

Filed Mar. 21, 1973, Ser. No. 343,604
Int. Cl. B65h *5/22*
U.S. Cl. 271—195 4 Claims

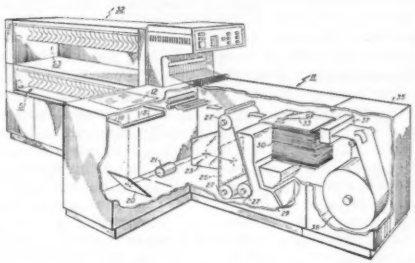


1. A pneumatic conveying device for transporting thin flexible sheet material having an upstream inlet end and a downstream outlet end comprising:
an elongated conduit having a slot along one side thereof extending longitudinally from the inlet end to the outlet end,
means positioned along both edges and substantially the full length of said slot to contain a supply of gas under pressure,
said gas containing means having generally smooth spaced apart continuous surfaces with the space therebetween being greater than the thickness of the sheet material to be conveyed,
a plurality of jet holes positioned in and spaced along the length of said gas containing means and directed inwardly toward the center of said conduit such that gaseous jets are uniformly directed across a plane that extends generally through said slot and the center of said conduit, and at least a portion of said jet holes being uniformly positioned in said gas containing means such that they are skewed in the downstream direction, whereby the gaseous jets exiting from said skewed jet holes tend to cause the sheet material to travel in the downstream direction toward said outlet end.

3,847,391
STACKING CONTROL APPARATUS

William Brant, Rochester, and Richard C. Schenk, West Webster, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Continuation of Ser. No. 146,331, May 24, 1971, abandoned.
This application Feb. 20, 1973, Ser. No. 333,817
Int. Cl. B65h *31/00*
U.S. Cl. 271—220 13 Claims

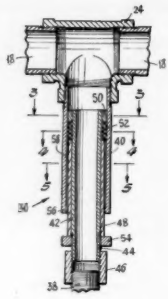


1. In sorting apparatus in which sheets are moved along a horizontal path and deflected downwardly into substantially vertical trays, an improved stacking control apparatus comprising:
a roller assembly suspended from the inlet of an associated tray and extending substantially in a vertical direction along the length of the tray, including a frame member and roller means positioned at the lowermost portion of said frame member to receive the downwardly directed sheets, and
a plurality of wire members pivotally supported on the same axis as said roller assembly extending from the top of said tray for guiding the sheets along a predetermined path in the direction of said roller means and impacting the top portion of the sheets to clear the path for the next incoming sheet.

3,847,392
ADJUSTABLE DROP OR RISER NIPPLE

Elwood R. Horwinski, Cheshire, Conn., assignor to CV Industries, Inc., Jacksonville, Fla.

Filed Nov. 8, 1972, Ser. No. 304,845
Int. Cl. A62c *37/08*; A16l *15/02*
U.S. Cl. 285—302 **4 Claims**



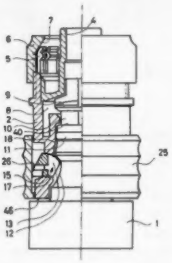
1. An extensible and retractable nipple for a building fire protection system to connect a sprinkler head assembly at the underside of a dropped ceiling to a water supply pipe in which water is to be maintained under continuous pressure, said nipple comprising a telescoping inner length and outer length of pipe adapted to depend from such supply pipe, said inner pipe having an exteriorly threaded lower end portion extending from the lower end of said outer pipe and being adapted to threadedly support a sprinkler head assembly having internal threads on its said lower end portion, said inner pipe being movable axially of said outer pipe to permit positioning of such attached sprinkler head assembly in selected positions relative to the distance below such supply pipe of the underside of the dropped ceiling, the upper end portion of said inner pipe being disposed within said outer pipe, the upper end portion of said outer pipe being adapted for connection to the water supply pipe, an elongated locking sleeve telescopingly interposed between said pipes, said sleeve having a lower end at said lower end portion of said inner pipe and an upper end disposed within said outer pipe, said inner pipe upper end including an outward shoulder affixed thereto adjacently above said upper end of said sleeve, a resilient sealing ring disposed between said pipes and in the space between said shoulder and said upper end of said sleeve, nut means threadedly engaged on said threaded lower end portion of said inner pipe above such sprinkler head assembly for moving said locking sleeve axially upwardly to squeeze said ring between said upper end of said sleeve and said shoulder thereby to expand said ring against said pipes to lock said inner pipe against movement with respect to said outer pipe and effect a seal therebetween, said nut means being located on said lower end portion of said inner pipe adjacent such sprinkler head assembly where it is accessible for adjustment below such dropped ceiling when said inner pipe is extended from said outer pipe.

3,847,393
SNAP COUPLING FOR FLUID CONDUITS

Otto Busselmeier, Hebbelstrasse 15, 1528-Ennepetal, Germany

Filed July 25, 1972, Ser. No. 275,080
Claims priority, application Germany, July 30, 1971, 2138103
Int. Cl. F16l *37/12*
U.S. Cl. 285—315 **25 Claims**

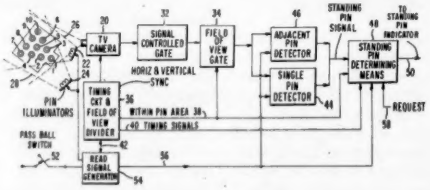
1. A snap coupling for fluid conduits, comprising an elongated female coupling element having a wall portion bounding an inner space and provided with apertures communicating with the latter; a male coupling element removably accommodated in said inner space; an actuating element externally surrounding said female coupling element and being shiftable longitudinally thereof from a normal resting position to an operative position; arresting means comprising a plurality of noses each biassed through one of said apertures into said space, pairs of arms extending from said respective noses in opposite directions, each of said arms being configured substantially to resemble one-quarter of a circle and having a free end, pairs of spring portions projecting in mutually opposite directions from said respective nose and being located in a plane which at least substantially parallels the plane of said arm, two arresting elements located at opposite circumferential sides of said female element and each having one of said noses, a pair of said arms and a pair of said spring portions curved in at least substantial conformance with the respective arm, and cooperating abutments provided on said male coupling element and engageable with said noses so as to couple said male and female elements with one another; releasing means for releasing said arresting means, comprising cooperating lever portions on said arresting means and engaging portions engaging said free ends of said arms on said actuating element for effecting pivotal displacement of said noses out of said inner space in response to shifting of said actuating element to said operative positions thereof; and abutment means operative for preventing radial displacement of said arresting means with reference to said coupling elements.



3,847,394
BOWLING PIN DETECTOR

Hugo Logemann, Jr., Concord, and Donald Francis Dion, Burlington, both of Mass., assignors to RCA Corporation, New York, N.Y.

Filed Dec. 26, 1972, Ser. No. 318,550
Int. Cl. A63d *5/04*
U.S. Cl. 273—54 E **33 Claims**



1. An apparatus for detecting and identifying each of a plurality of standing bowling pins disposed anywhere within a given field of view comprising:

pin detecting means including sweep means for sweeping said field of view to generate a pin standing signal for each standing pin regardless of the position of that pin in said field of view,

field of view dividing means for dividing at least a portion of said field of view into a plurality of pin identifying regions and operated in synchronism with said pin detecting means to generate a field of view region identifying signal manifesting each of said regions in accordance with the time position and duration of that region identifying signal with respect to said swept field of view,

standing pin determining means responsive to said pin standing signal and said region identifying signal applied as input signals thereto for generating a signal manifesting both the presence and identification of each of said standing pins when the pin standing signal and region identifying signal occur in time coincidence for that pin then being detected, and

means for applying said region identifying signal and said pin standing signal as said input signals to said determining means.

3,847,395

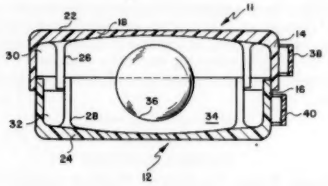
INTERMESHING PADDLES

Ruggero Santilli, 74 Bakerhill Rd., Weston, Mass. 02193

Filed Aug. 22, 1973, Ser. No. 390,588

Int. Cl. A63b 71/00

U.S. Cl. 273—96 R **6 Claims**



1. A pair of paddles for a paddle game comprising:

a. a first paddle comprising a disc with a depending marginal skirt;

b. a second skirt depending from the interior surface of said disc;

c, a plurality of partially recessed webs bridging the gap between said marginal skirt and said second skirt;

d. a second paddle configured as the first except that it is dimensioned so that complementary oppositely disposed skirts and webs of said paddles mesh with said skirts and webs to form an easily-releaseable force fit, thereby forming a closed compartment; and

e. a handle affixed to the exterior surface of each marginal skirt.

3,847,396

UMPIRES RAY GUN FOR USE IN WEAPON TRAINING SYSTEMS

David William Ashford, Farnborough, England, assignor to The Solartron Electronic Group Limited, Farnborough, Hampshire, England

Filed July 26, 1973, Ser. No. 383,026

Claims priority, application Great Britain, July 29, 1972, 35569/72

Int. Cl. F41j 5/02

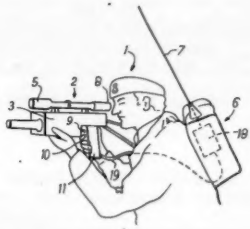
U.S. Cl. 273—101.1 **6 Claims**

1. Apparatus for use with a responsive target forming part of a weapon training system the target being of the type having detecting means for detecting the incidence of electromagnetic radiation modulated in different modes and having transmitting means operably connected to said detecting means for transmitting radio signals in response to said incident radiation, and with a selective circuit connected to receive signals from said detecting means and responsive to a predetermined mode of modulation of said radiation corresponding to a "kill" signal, the apparatus comprising in combination

a support body;

radiation source means mounted on said body for providing a collimated beam of electromagnetic radiation;

modulating means co-operating with said source for modulating said beam in at least first and second modes, said first mode being selected to activate the transmitting means to transmit without activating the "kill" signal selective circuit, and said second mode being selected to activate said selective circuit on the target as a "kill" signal;



manually operable switch means connected to said modulating means for selecting at will each of said modes of modulation; and for causing the beam to be transmitted in said selected mode

aiming means connected to said source and mounted on said body and aligned with said beam for aiming said beam at the target;

radio receiving means for receiving the radio signals transmitted from the target; and

indicating means connected to said receiving means for indicating that the detecting means on the target has detected the incidence of the beam.

3,847,397

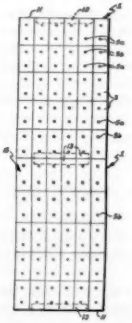
GAME APPARATUS WITH A PAIR OF BOARD MEMBERS AND PLAYING PIECES

George D. Price, Rt. 2, Tilberry Rd., Powell, Tenn. 37849

Filed June 12, 1973, Ser. No. 369,246

Int. Cl. A63f 3/00

U.S. Cl. 273—131 AD **6 Claims**



1. A game apparatus comprising a pair of substantially identical board members, each said board member being rectangular in configuration with two of its sides longer than the other two of its sides, each of said board members being

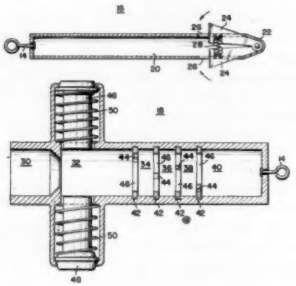
separable and including a joining side which is adapted to be juxtaposed to a corresponding side of the other board member to form a complete playing board assembly, each of said board members having a surface which is divided into a plurality of playing spaces and each space having spaced apart holding means to receive playing tokens, the playing spaces of said board members being positioned adjacent one another to form the entire playing surface of the apparatus when said joining sides are juxtaposed, said joining sides being shorter sides and each including a magnet for retaining the joined sides in juxtaposed position and the playing spaces in a single continuous playing surface, the other shorter side of each board member including a magnet whereby said board members are adapted to be superimposed and joined together for storage.

3,847,398

GAME EMPLOYING WRIST ENGAGING MEANS WITH DISENGAGABLE LATCHES

Donald A. Kidd, 1901 Beach St. No. 8, San Francisco, Calif. 94123

Filed Aug. 1, 1973, Ser. No. 384,472
Int. Cl. A63f *9/08*
U.S. Cl. 273—156 **6 Claims**



1. In combination:
first and second wrist engaging means; and
first and second detachably engagable cooperating latching devices, each device being engaged with its corresponding means, the first device including an elongated member with oppositely disposed arrow tip half sections normally extended but being retractable into the body of the member, the second device having a cruciform shape with a longitudinal bore in the longitudinal portion and two transverse aligned bores disposed in the opposite sections of the lateral portion of the cruciform shape, said tip half sections engaging the longitudinal bore interior when the two devices are engaged, the second device including a pair of manually operable means, each manually operable means being disposed in a corresponding transverse bore, said pair of manually operable means being operated together to enable the latching devices to become disengaged.

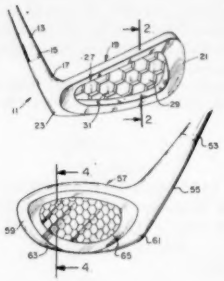
3,847,399

GOLF CLUB WITH UNIT-CELL HEAD CONSTRUCTION

William R. Raymont, 29208 Firthridge Rd., Palos Verdes, Calif. 90274

Filed May 3, 1973, Ser. No. 356,962
Int. Cl. A63b *53/04*
U.S. Cl. 273—167 F **18 Claims**

1. A golf club, comprising:
an elongated shaft having a lower end; and
a head having a hosel in an upper portion thereof, said lower end of said shaft being fixedly disposed in said hosel, said head also having a toe portion and a heel portion and a generally planar high modulus impact face between said toe and heel portions, said head portion having hollow unit-cell structure means disposed therein immediately behind said impact face for broadening the effective hitting area of said impact face while reinforcing and enhancing the stiffness of said impact face, said unit-cell structure means including a plurality of interconnected elongated unit-cells encapsulated by other interconnected elongated unit-cells, each of the unit-cells being defined by boundary cell walls, each boundary cell wall having a cross sectional thickness substantially less than the average of the largest and smallest external cross sectional dimension of the bounded unit cell, said boundary cell walls extending generally rearwardly from and generally perpendicularly to the plane of said impact face.

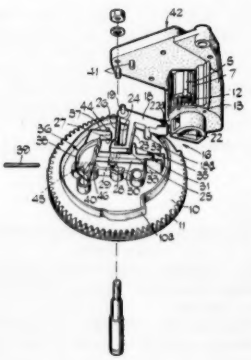


3,847,400

RECORD PLAYERS

Philip Henry Evans, Stourbridge, England, assignor to Glenburn Engineering Limited, Hamilton, Bermuda

Filed Apr. 20, 1973, Ser. No. 353,013
Claims priority, application Great Britain, Apr. 20, 1972, 18291/72
Int. Cl. G11b *17/02*
U.S. Cl. 274—1 L **7 Claims**



1. A record player for playing disc records, which includes a mechanism for executing a cycle of automatic operations upon completion of the playing of one record, incorporating a driving means for the automatic mechanism in the form of a first gear wheel capable of driving engagement with a second gear wheel rotatable with the turntable, the first gear wheel having a gap in its teeth which, during playing of a record, lies adjacent the second gear wheel so that the first gear wheel

remains stationary, drive means being provided comprising a pawl member carried by the first gear wheel and movable into driving engagement with a part associated with the second gear wheel to start movement of the first gear wheel to cause the teeth of the two gear wheels to mesh, whereby the first gear wheel is rotated through a single revolution during which said cycle of automatic operations is executed and returned to its initial position when the gap in the teeth of the first gear wheel again lies opposite the second gear wheel, wherein the pawl member is pivotally mounted on the first gear wheel in relatively friction free pivot means for pivotal movement of an abutment portion of the pawl member into and out of a position for engagement with said part associated with the second gear wheel, an operating member mounted for rectilinear sliding movement relative to the first gear wheel, the pawl member including a mounting portion which engages said operating member on the underside and near the center of gravity thereof to support the operating member, at least substantially wholly, on the pawl member, the operating member having a portion engageable with an actuating means provided on the record player, when the first gear wheel is in said initial position, whereby movement of the actuating means causes movement of the operating member which pivots the pawl member to move said abutment portion into position for engagement with said part of the second gear wheel.

3,847,401

RECORD PLAYERS

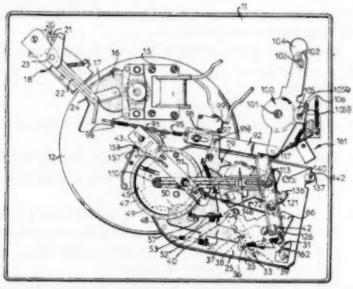
Philip Henry Evans, Wollaston, Stourbridge, England, assignor to Glenburn Engineering Limited, Hamilton, Bermuda

Filed Dec. 4, 1972, Ser. No. 311,636

Claims priority, application Great Britain, Dec. 4, 1971, 56409/71

Int. Cl. G11b *17/16*

U.S. Cl. 274—10 R **14 Claims**



1. An automatic record player for playing disc records of different sizes comrprising a deck plate, a turntable rotatably mounted on the deck plate and driven, in use, by an electric motor, a centre spindle extending upwardly from the centre of the turntable and from which records are fed singly in succession from the bottom of the stack onto the turntable, a pick-up arm, pivotally mounted for movement about a horizontal axis on the upper end of a vertical spindle, the vertical spindle being pivotally mounted for movement about a vertical axis relative to the deck plate, a drive gear rotatably mounted on the deck plate, and means for rotating the drive gear during a record changing cycle, a drive lever, having a first end and a second end, movably mounted on the deck plate, said first end being drivingly connected to the drive gear and said second end being drivingly connected to the vertical spindle to pivot the pick-up arm outwardly and inwardly of the turntable as a result of movement of the drive lever caused by rotation of the drive gear, a selector plate provided on the vertical spindle for rotation therewith, the selector plate having a plurality of abutments angularly spaced apart around the axis of the vertical spindle, a selector latch movable from a first position in which free movement of the selector plate is permitted into a second position for engagement with a desired one of the abutments to limit pivotal movement of the selector plate, the position of the selector latch being adjustable so that it is in a position to engage the appropriate one of the abutments corresponding to the size of record to be played and to thus halt the inward movement of the pick-up arm in the correct position for the size of record to be played, a drive link, separate from the drive lever, one end of the drive link being pivotally connected to the drive gear, about an axis spaced from, and parallel to, the axis of rotation of the drive gear, the other end of the drive link being mounted relative to the deck plate for sliding movement relative thereto and for pivotal movement about an axis, spaced from, and parallel tO, the axis of rotation of the drive gear as a result of rotation of the drive gear, the drive link being operative to raise and lower the pick-up arm on movement of the drive link resulting from rotation of the drive gear, and selector latch drive means being provided on the drive link to move the selector latch between said first and second positions.

3,847,402

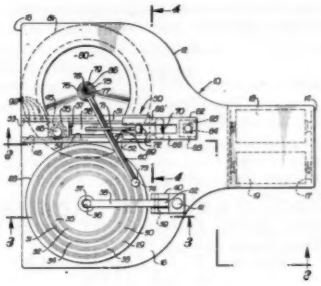
PHONO DISC PLAYBACK

James T. Shacklett, 427 S. Manhattan Pl. No. 204B, Los Angeles, Calif. 90005

Filed Dec. 20, 1972, Ser. No. 317,067

Int. Cl. G11b *17/06*

U.S. Cl. 274—14 **11 Claims**



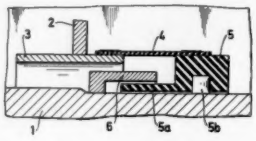
1. A phonograph disc playback device for use with a disc having bands of grooves comprising a frame, a motor actuated turntable on the frame, said frame including a guideway, a carriage slidably mounted on the guideway, a tone arm carried by the carriage and a needle on the tone arm having playing engagement positions relative to the disc, said carriage having a plurality of stations on the guideway corresponding to the respective bands of grooves on the disc, said tone arm having a path of travel on said carriage between start and finish play positions of a selected band, an actuating lever movably mounted on said frame for operation between operating and release positions, said actuating lever being operably connected with said tone arm at said stations, said tone arm being in play position with the needle in contact with the disc at start play position when said actuating arm is in operating position, there being a return mechanism on the carriage operably associated with the tone arm and operable to return the tone arm to start position, and a switch for activating the turntable responsive to movement of the actuating lever when the actuating lever is in operable position, whereby upon each movement of the actuating lever after return of said tone arm to start play position there is a repeat play of the needle on the selected band of the disc.

3,847,403

SEAL FOR A CONVEYOR AXLE OF A TRAVELING GRATE

Ingo Thiesler, Neubeckum, and Wilhelm Hackbarth, Ahlen, both of Germany, assignors to Polysius AG, Neubeckum, Germany

Filed Sept. 10, 1973, Ser. No. 395,961
Claims priority, application Germany, Dec. 5, 1972, 7244485
Int. Cl. F16j 15/44
U.S. Cl. 277—57 4 Claims



1. A seal for a rotary conveyor axle comprises a stationary, annular housing encircling said axle and having at least one end thereof terminating short of the corresponding end of said axle; a packing ring encircling said axle and spaced from said one end of said housing, said housing and said packing ring being of substantially the same outside diameter; and an annular, elastic sealing sleeve of substantially uniform wall thickness and having an inside diameter corresponding substantially to the outside diameter of said housing and said packing ring, said sleeve spanning the space between said housing and said packing ring, said housing being fitted into and secured to one end of said sleeve and said packing ring being fitted into and secured to the other end of said sleeve.

ERRATUM

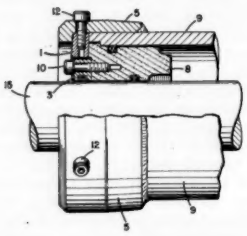
For Class 277—153 see:
Patent No. 3,847,389

3,847,404

WEDGE LOCK HYDRAULIC CYLINDER HEAD

Salvatore R. Agostino, Jr., Setauket, N.Y., assignor to Edward D. Meyer, Nassau Point, N.Y.

Filed Mar. 27, 1973, Ser. No. 345,367
Int. Cl. F16j 15/00
U.S. Cl. 277—187 6 Claims



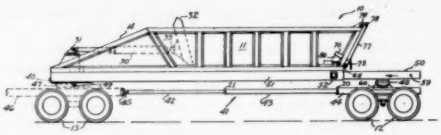
1. A hydraulic cylinder head with a locking means comprising
a hydraulic cylinder tube,
a collar on said hydraulic cylinder tube,
a cylinder rod located within said cylinder tube,
a solid packing around said cylinder rod and within said cylinder tube, and
a plurality of wedge-shaped spaced locking members placed between said collar and retaining means, said retaining means being located between said wedge-shaped locking means and said cylinder rod.

3,847,405

SPREADING AND END SPILL DUMP TRAILER

Arthur W. Pearce, 275 Lk. Desire Dr., N., Renton, Wash. 98055

Filed July 25, 1972, Ser. No. 275,058
Int. Cl. B62d 21/14
U.S. Cl. 280—34 A 6 Claims



1. An improved trailer for highway hauling and dumping of materials, comprising:
a. a main load bearing frame member;
b. a load carrying bed fixedly mounted on said load bearing frame member;
c. a sliding frame member telescopically receivable within and extensible from said main frame member;
d. a set of rear bogies;
e. means connecting said rear bogies to said sliding frame member; and
f. means activated from the cab of a tractor pulling said trailer for automatically locking said sliding frame member with respect to said main frame member, in at least two preselected positions, so as to vary the distance between said rear bogies and the front of said trailer; said locking means comprising:
i. an adapter plate secured to said main frame member;
ii. a cylindrical housing fixedly engaged with said adapter;
iii. an orifice in said adapter plate;
iv. an orifice in said main frame member aligned with said orifice in said adapter plate;
v. a plurality of orifices in said sliding frame member for selective alignment with said orifice in said main frame member;
vi. a locking pin disposed within said housing and selectively movable through said orifice in said adapter plate and said aligned orifices in said main frame member and said sliding frame member;
vii. an air ram attached to said locking pin for actuating the same;
viii. spring means normally urging said air ram towards and said pin through said aligned orifices;
ix. air inlet means for admitting air under pressure between said air ram and said adapter plate; and
x. a pneumatic air supply controlled from the cab of said tractor to supply pressurized air to said air inlet means for selectively withdrawing said pin from said aligned orifices.

3,847,406

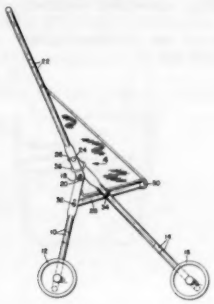
FOLDING STROLLER

Benjamin K. Burnham, Gardner, Mass., assignor to Thayer, Inc., Gardner, Mass.

Filed Mar. 27, 1973, Ser. No. 345,329
Int. Cl. B62b 11/00
U.S. Cl. 280—36 B 11 Claims

1. A folding stroller comprising a front frame, a rear frame, a pusher handle frame, and a seat frame, and wheels on the front and rear frames at corresponding ends thereof,

first means for pivotally connecting the end of the front frame opposite the wheels to the pusher handle frame, second means for pivotally connecting the ends of the rear frame opposite the wheels to the pusher handle frame, said second pivot means being spaced from said first pivot means toward said wheels, means pivotally



connecting said seat frame to said rear frame and front frame intermediate the ends of respectively said rear and front frame,

and releasable locking means locking the front frame with respect to the pusher handle frame in erected position of the stroller.

3,847,407

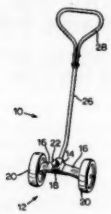
TRACTION DEVICE FOR TRAILERS

Norman Philip Balletto, 181 Van Dusen Blvd., Toronto, Ontario, Canada

Filed May 12, 1972, Ser. No. 240,219

Int. Cl. B62b *1/08*

U.S. Cl. 280—46 **1 Claim**



1. A knock-down traction device for lifting and towing a trailer or the like comprising, a frame member in the form of a narrow strip of material formed to an arch-shaped configuration and having axially aligned passage means at opposite ends thereof, axle means releasably extending through said axially aligned passages of said frame and projecting outwardly therefrom, wheel means releasably mounted on each outwardly projecting end of said axle means, a tubular handle member one end mounted at the apex of said arch-shaped frame member and projecting rearwardly therefrom, a ball-shaped coupling releasably mounted at the apex of said arch-shaped frame, said ball-shaped coupling releasably securing said handle means with respect to said frame, said handle means having a first portion projecting rearwardly from said frame substantially at right angles to a first plane extending through said axle and centrally of the width of said arch-shaped frame member and a second portion projecting rearwardly from said first portion at an angle less than 90° with respect to said first plane in a second plane which projects substantially radially with respect to the axis of said axle means, said handle being movable in an arc between a first position in which said ball-shaped coupling is disposed at ground level on one side of a second plane which extends vertically through the center of the axle to engage a coupling element of a trailer and a second position on the other side of said second plane wherein said second portion of said handle is disposed at ground level, said ball-shaped coupling member being adapted to support a trailer in a stable elevated station when said handle is in said second position.

3,847,408

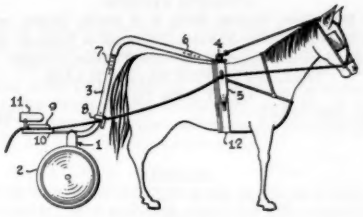
SINGLE SHAFT SULKY

Joseph H. King, 930 John Anderson Dr., Ormond Beach, Fla. 32074

Filed Sept. 13, 1971, Ser. No. 179,931

Int. Cl. B62d *27/04*

U.S. Cl. 280—63 **9 Claims**



1. A sulky for use in harness horse racing, comprising:

arch axle frame means having an elastic axis and having first and second ends;

wheel means secured to each of said first and second ends of said arch axle frame means, the rotational axes of said wheel means being placed aft of the elastic axis of said arch axle frame means to produce a drag-reducing castoring action in said wheel means;

an adjustable seat secured to and extending aft of said arch axle frame means; and

a shaft having a single point connection adapted to be secured to the harness of a horse, said shaft being secured to said arch axle frame means and extending upwardly and forwardly over said horse when said sulky is connected to the horse's harness, said shaft, seat, and arch axle frame means being flexible and having a spring constant to produce a fore and aft motion of said sulky at a frequency which conforms to the gait of the horse.

3,847,409

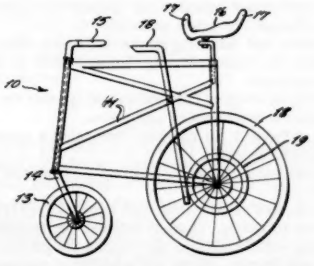
WALK-A-CYCLE

Merle L. Shaffer, R.F.D. No. 1, Turin, Iowa 51059

Filed Aug. 29, 1973, Ser. No. 392,795

Int. Cl. B60p *1/00*

U.S. Cl. 280—87.02 R **1 Claim**



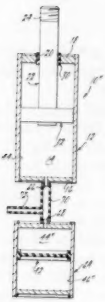
1. In a walk-a-cycle, the combination of a frame supported upon a front and rear wheel and means whereby a rider can

support his weight thereupon while walking with his feet upon a ground, said means comprising a vertically adjustable seat mounted upon said frame so to accommodate all sizes of said riders, said front wheel being steerable, and said walk-a-cycle being able to be braked so to stop, said steerable front wheel being supported at a lower end of a fork which at its upper end is integral with a steering shaft journalled in a front end of said frame, an upper end of said shaft having a normally rearward steering arm, and said fork being normally rearwardly downwardly inclined in camber toward said rear wheel.

3,847,410
LEVELING SYSTEM

Johan H. Keijzer, Hasselt; Willy R. J. Pierle, Tienen, and G. Van De Voorde, Sint-Martent-Latem, all of Belgium, assignors to Monroe Belgium N.V., Saint-Truiden, Belgium

Filed June 12, 1972, Ser. No. 261,608
Int. Cl. B60g 11/26
U.S. Cl. 280—124 F **42 Claims**



1. In a leveling system for a vehicle having sprung and unsprung portions,

at least one leveling strut comprising a cylinder connected at one end to one of the vehicle portions,

a piston reciprocally mounted within said cylinder and operable at selected equilibrium positions within said cylinder to damp relative movement between the sprung and unsprung vehicle portions,

a piston rod connected to said piston and projecting from one end of said cylinder and adapted for connection to the other of the vehicle portions,

said piston rod including means defining a fluid passage therein for communicating damping fluid to and from said cylinder,

a quantity of damping fluid within said cylinder for damping reciprocal movement of said piston,

means defining a gas chamber containing a quantity of a compressible gas,

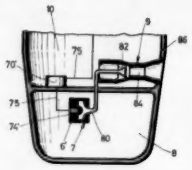
separating means for separating said gas from said damping fluid, and

means located remote from said strut and operable in response to attitude changes between the sprung and unsprung vehicle portions for varying the pressure of said gas and thereby change the equilibrium position of said piston within said cylinder and hence predeterminately control the relative attitude between the sprung and unsprung vehicle portions.

3,847,411
VEHICLE ACCIDENT PROTECTION SYSTEM AND METHOD OF PROTECTING PASSENGERS

Gunter Herrmann, Ottobrunn-Riemerling, Germany, assignor to Messerschmitt-Bolkow-Blohm Gesellschaft Mit Beschrankter Haftung, Munich, Germany

Filed Mar. 21, 1972, Ser. No. 236,711
Claims priority, application Germany, Mar. 30, 1971, 2115302
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB **9 Claims**

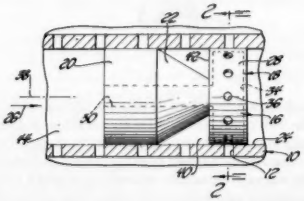


1. A vehicle for the transportation of persons particularly automobiles having a shock-absorption system, comprising at least one inflatable casing adapted to be installed in the passenger compartment of the automobile, fluid-pressure means, means for sensing an accident condition of the automobile connected between said casing and said fluid-pressure means for initiating the inflation of said casing by means of said fluid-pressure, and pump means having a suction in the passenger compartment and a discharge connected to atmosphere and being connected to said sensing means and said fluid-pressure means and being actionable thereby to produce an underpressure in the passenger compartment at the same time as said casing is inflated.

3,847,412
INFLATING PLUG

John E. Mattson, 26136 Hampden, Madison Heights, Mich. 48071

Filed June 27, 1972, Ser. No. 266,544
Int. Cl. B60r 21/08
U.S. Cl. 280—150 AB **9 Claims**



1. In an automotive vehicle cabin having an inflatable bag operable to inflate within the cabin providing a soft bumper and passenger motion restraint responsive to a preselected threshhold of deacceleration of the automotive vehicle, the improvements comprising:

a tube for conducting gas to the inflatable bag;

the inflatable bag being wrapped around said tube prior to inflation;

said tube having apertures for conducting gas from inside the tube to the bag;

a plug preventing passage of gas through the tube operable to slide through the interior of the tube, allowing passage of gas through the tube;

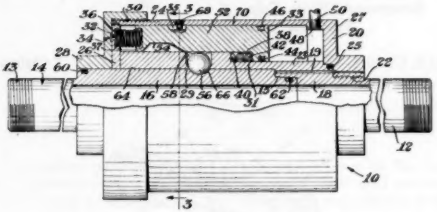
said plug having a hollow portion for conducting gas from aft of the plug to immediately aft of the forward face of the plug and to said bag in an amount and rate substantially less than gas being fed to the bag immediately aft of the plug.

3,847,413

QUICK RELEASE COUPLING

Derrell G. Gurley, New Orleans, La., and James P. Chisholm, Sand Springs, Okla., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 23, 1973, Ser. No. 408,712
Int. Cl. F16l 37/18
U.S. Cl. 285—316 **4 Claims**



1. Quick release coupling apparatus comprising male and female coupling members, said coupling members each being adapted to be attached at one end to a line member, said female member having an attachment section including inner and outer peripheral tubular walls, closed ends, and an advanceable and retractable generally tubular piston disposed in sealing contact with and within the space defined by said inner and outer walls and closed ends, means for limiting rotary motion of said piston, said inner peripheral wall having an array of bores extending therethrough, said bores being of smaller diameter at the side of said inner peripheral wall which is adapted to receive said male coupling member, said piston having an array of grooves in its inner surface, said grooves being disposed over said bores when said piston is in its retracted position, and a plurality of balls, one of said balls being disposed in each of said bores, the maximum diameter of said balls exceeding the smaller diameter of said bores, remotely controllable hydraulic advancing and spring loaded retracting means for advancing and retracting said piston whereby said grooves therein may be misaligned or aligned with said balls, said male member having an outer peripheral part shaped to mate with the inner peripheral wall of said female part, said outer peripheral part having at least a plurality of depressed surface parts which are aligned with said bores of said female part when said male and female members are mated, the depth of said depressed surface parts being a minor fraction of the diameter of said balls.

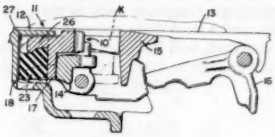
3,847,414

FRONT BEARING BLOCK ASSEMBLY FOR TRACTOR FIFTH WHEEL

Francis Eli Madura, Whiting, Ind., assignor to AMSTED Industries Incorporated, Chicago, Ill.

Filed Dec. 19, 1973, Ser. No. 425,987
Int. Cl. B62d 53/08
U.S. Cl. 280—437 **4 Claims**

1. In a fifth wheel assembly having a fifth wheel plate, a rear jaw and an intermediate jaw mounted on said fifth wheel plate for translatory movement between an open and a closed position, and a front bearing block assembly, the improvement wherein said front bearing block assembly comprises a bearing block having a substantially rectangular plate, a front coupling jaw projecting from the upper end of one side of said plate, a shank projecting from the upper end of the other side of said plate, said shank having lengthwise varying cross-sectional areas to provide a necked-in portion along the major portion of the length of said shank and a bulbular-like terminal end,



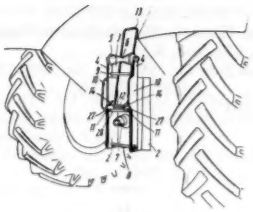
a resilient buffer block having a slot along the upper end thereof receiving said shank, said slot being shaped approximately the same as said shank with the lengthwise cross-sectional areas accommodating said shank being about the same as the corresponding cross-section area of said shank thereby to resiliently grip and retain said shank in said slot.

3,847,415

DEVICE FOR CONNECTING AN AGRICULTURAL IMPLEMENT, MACHINE OR THE LIKE TO A TRACTOR

Hubert Geisthoff, Lohmar/Donrath, Germany, assignor to Jean Walterscheid GmbH, Lohmar/Rhineland, Germany

Filed Sept. 28, 1973, Ser. No. 401,863
Claims priority, application Germany, Sept. 29, 1972, 2247903; Feb. 20, 1973, 2308218
Int. Cl. B60d 1/08
U.S. Cl. 280—478 R **19 Claims**



1. In a device for connecting an agricultural implement and the like to a tractor vehicle, the combination of a catch bar having its lower end pivotally mounted on the rear of a tractor vehicle and an alignment roller on its upper end, a coupling plate mounted on the implement to be connected, an aligning hook on said coupling plate having an opening engagable with said catch bar alignment roller, and mutually engagable means on said tractor vehicle and coupling plate for locking said coupling plate with respect to said tractor vehicle after connection therebetween.

3,847,416

HYDRAULIC CONTROL CIRCUIT WITH REMOTELY CONTROLLED DUAL PRESSURE RELIEF VALVE

Leon E. Hicks, Joliet; John W. Grant, Pekin; Loyal O. Watts, Mapleton, and Wayne A. Peterson, Joliet, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Nov. 2, 1973, Ser. No. 412,452
Int. Cl. B60d 1/00
U.S. Cl. 280—481 **13 Claims**

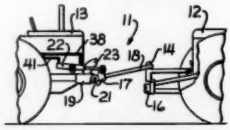
1. A hydraulic control circuit providing for dual pressure operation of a push-pull coupling between two vehicles which are selectively operable in tandem, the coupling including

hook means on one vehicle and a latch member disposed on the other vehicle, a double-acting hydraulic jack regulating movement of the latch member between engagement and disengagement relative to the hook means, the control circuit comprising

a source of fluid under pressure,

a control valve having an inlet passage in communication with the source and a movable spool means for selectively communicating opposite ends of the jack with the inlet passage and a fluid drain respectively,

a pilot operated, dual pressure relief valve communicating the inlet passage to drain, the relief valve normally establishing a relatively low fluid pressure within the inlet passage, and



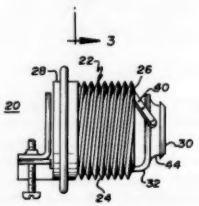
pilot control means operatively responsive to the position of the latch member and in communication with the relief valve, the pilot control means conditioning the pilot operated relief valve for establishing a relatively high fluid pressure within the inlet passage while the jack is being operated to disengage the latch member from the hook means, the pilot control means conditioning the pilot operated relief valve to establish the relatively low fluid pressure within the inlet passage as the latch member approaches a fully retracted position.

3,847,417

ELECTRICAL FITTING

Jaspal S. Bawa, Elizabeth, N.J., assignor to Thomas & Betts Corporation, Elizabeth, N.J.

Filed June 22, 1973, Ser. No. 372,467
Int. Cl. H02g *3/06*
U.S. Cl. 285—161 **6 Claims**



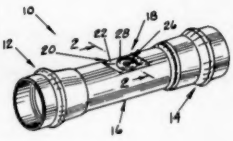
1. An electrical fitting comprising: a generally hollow tubular body member having a given inner diameter, a first end, a second end, and an externally threaded portion extending from said body member first end a given length towards said body member second end; an annular ring having a given inner diameter less than said inner diameter of said body member and having a smooth tapered interior surface having a first portion adjacent said body member first end, said first portion having a convex form converging towards the axis of said annular ring and away from said body member first end, said interior surface having a second portion contiguous with said first portion and flaring outwardly adjacent the end of said annular ring remote from said body member, said annular ring being selectively axially spaced from and disposed generally adjacent said body member first end in coaxial alignment therewith, said annular ring being connected to said body member by a narrow web portion extending between said body member first end and the periphery of said annular ring; said body member, annular ring and web portion being formed integrally from the same material, and at least one tab means connecting said body member first end to the periphery of said annular ring at a point selectively spaced from said web portion to maintain said annular ring in a given position with respect to said body member first end.

3,847,418

PLASTIC PIPE SECTION WITH AN IMPROVED TAP-IN ARRANGEMENT

Ralph Semprevivo; Donald W. Andrews, both of Franklin; Richard L. Clark, Utica, all of Pa., and David W. French, Denison, Tex., assignors to Johns-Manville Corporation, Greenwood Village, Colo.

Filed Dec. 1, 1972, Ser. No. 311,198
Int. Cl. F16l *15/00*
U.S. Cl. 285—219 **3 Claims**



1. A plastic pipe section comprising:

a. a hollow body portion having a curvilinear cross-section;

b. a tap-in outer zone comprising an integral part of and integrally formed in said body portion and having a substantially flat exterior surface and a substantially flat interior surface;

c. a tap-in inner zone surrounded by and integrally formed with said outer zone and defined by a curvilinear periphery, said inner zone being inwardly indented with respect to said interior and exterior surfaces of said outer zone and having substantially flat exterior and interior surfaces; and

d. said tap-in inner zone including an internally threaded open ended passage extending therethrough, said passage providing fluid communication between the interior and exterior of said body portion.

ERRATA

For Classes 285—302 and 285—315 see:
Patents Nos. 3,847,392 and 3,847,393

ERRATUM

For Class 285—316 see:
Patent No. 3,847,413

3,847,419

SEALED TUBE CONNECTORS

Robert S. Brown, Tecumseh, Mich., assignor to Standard Steel Products Corporation, Tecumseh, Mich.

Filed Apr. 5, 1973, Ser. No. 348,054
Int. Cl. F16l *19/00*
U.S. Cl. 285—330 **4 Claims**

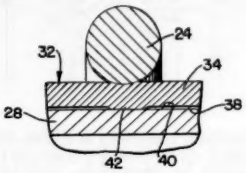
1. A sealed connection for fluid transmitting exhaust tube members comprising:

aligned rigid tubular members one having an enlarged diameter end portion slid over the end of the other tubular member in telescoping engagement;

said rigid tubular members made of metallic material having a sufficiently great hardness to preclude forming a connection therebetween by deforming said enlarged end against the inner end by clamps;

a tubular sleeve member positioned around the enlarged end of said one rigid tubular member and around the adjacent portion of the other rigid tubular member and having sufficiently large end openings permitting sliding engagement around the ends of said rigid tubular members during assembly;

adjustable clamp means positioned near both ends of said sleeve member and having encircling portions there-



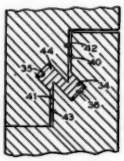
around producing an even compressive force on the end portions of said sleeve member against said rigid tubular members which acts on the entire 360° circumference of said sleeve member;

said sleeve member made of a soft and ductile metallic material having a Brinell hardness less than about 150 and said sleeve portions underlying said clamp means being deformed inwardly by said compressive force producing a line seal contact between said sleeve and said rigid tubular member on either side of said adjacent tube end portions thereby sealing the fluid within said tubes.

3,847,420
INDUSTRIAL TECHNIQUE

Ovid Kingsley Seville, Yardley, Pa., assignor to Weston Instruments, Inc., Newark, N.J.

Continuation-in-part of Ser. No. 10,168, Feb. 10, 1970, abandoned. This application June 14, 1971, Ser. No. 152,825
Int. Cl. F16l *17/00*
U.S. Cl. 285—336 **4 Claims**

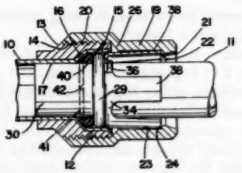


1. A seal comprising a pair of members in telescopic engagement, one of said members having a recess formed therein to receive said other member, said other member having two axially spaced portions formed thereon for sliding engagement with the sides of said recess, said portions being radially separated from each other by a shoulder that defines a common plane, said one member having a generally inwardly opening groove formed at said plane common to said portions and said other member having a generally outwardly opening groove formed therein at said common plane, each of said grooves lying in a plane at an acute angle with the axis of said telescopic engagement, said grooves being axially offset from each other, and a plastically deformable material interposed between said grooves for extrusion into said grooves when said members are telescoped together.

3,847,421
QUICK CONNECT TUBE COUPLING JOINT

John T. Eschbaugh, Chesterland, and David N. Mooney, Chagrin Falls, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Nov. 24, 1972, Ser. No. 308,974
Int. Cl. F16l *19/00*
U.S. Cl. 285—353 **11 Claims**

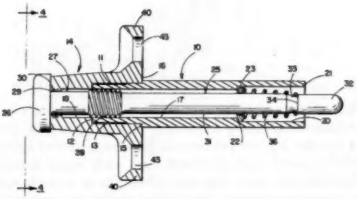


1. A tube coupling joint comprising first and second housing members detachably connected to each other and forming a chamber, one of the members having an opening and a transverse shoulder, a tube having an end portion extending through the opening into said chamber, said tube having a radial shoulder thereon axially inward of said transverse shoulder, a collet positioned completely on one side of said tube shoulder and axially between said shoulders, said collet having a first end portion engaged with one of said shoulders and a second end portion engaged with the other of said shoulders for retaining the tube within said chamber, said collet including a spring finger that carries one of said end portions, said finger being radially deflectable out of engagement with the respective shoulder, and a resilient packing in sealed engagement with said tube and the other of said members, said sealed engagement with said tube being with said tube shoulder and with a cylindrical portion of the tube adjacent said shoulder, and said one member being so constructed as to be freely movable relative to said tube during detachment of said first member from the second member.

3,847,422
FASTENER WITH RETRACTABLE PLUNGER

Bulent Gulistan, Malibu, Calif., assignor to Deutsch Fastener Corp., Los Angeles, Calif.

Filed May 25, 1973, Ser. No. 363,845
Int. Cl. E05c *5/00*
U.S. Cl. 292—60 **2 Claims**



1. A fastening device comprising

a tubular member having

a bore therein,

a counterbore extending inwardly from one end thereof, a shoulder interconnecting said bore and counterbore, internal screw threads adjacent the opposite end thereof having a minor diameter less than the diameter of said bore,

and means for attachment to a workpiece,

an annular member adjacent said shoulder,

said annular member having an internal diameter less than the diameter of said bore,

a plunger extending through said tubular member, said plunger having

a first surface slidably received in said internal screw threads,

a second surface slidably received in said annular member,

external screw threads intermediate said first and second surfaces,

said external screw threads being meshable with said internal screw threads,

a head exteriorly of the opposite end of said tubular member and engageable therewith, and a shoulder,

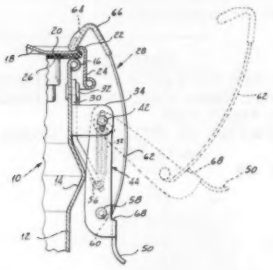
and a compression spring interposed between said annular member and said shoulder of said plunger for biasing said plunger in one direction toward an extended position in which said head engages said opposite end of said tubular member and the opposite end of said plunger projects outwardly beyond said one end of said tubular member, said head being manually engageable for moving said plunger in the opposite direction to a retracted position in which said opposite end of said plunger is relatively adjacent said one end of said tubular member and for rotating said plunger to cause said internal and external threads to mesh for holding said plunger in said retracted position.

3,847,423

DUAL SPRING ACTION SELF ADJUSTING LATCH

Paul R. Gley, Hillsdale, N.J., assignor to Rexnord, Inc., Milwaukee, Wis.

Filed Apr. 2, 1973, Ser. No. 347,130
Int. Cl. E05c *5/02*
U.S. Cl. 292—113 **7 Claims**



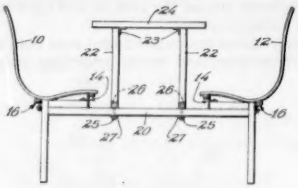
1. A latch assembly for securing a pair of members in assembled relationship along a parting line including in combination, a handle, a pivot pin on said handle, a pair of spaced ears on a first one of said members, said ears being formed with parallel slots for receiving said pivot pin to mount said pivot pin on said one member for limited sliding movement toward and away from said parting line along a line perpendicular to the pin length, a spring biasing said pin for movement along the length of said slots toward corresponding ends thereof, and a draw hook pivotally carried by said handle for movement toward and away from said one member, said handle being movable in one direction from a first position at which said drawhook is remote from said one member to an intermediate position at which said drawhook engages the other member positioned in cooperative relationship to said one member and then movable in the other direction back to said first position to draw said members together in assembled relationship.

3,847,424

UNIT CONSTRUCTION BOOTHS

Harold R. Nielsen, 615 Centennial Dr., Kenyon, Minn. 55946

Filed Jan. 2, 1973, Ser. No. 320,517
Int. Cl. A47b *83/04*
U.S. Cl. 292—158 **3 Claims**



1. A booth assembly comprising in combination:

a frame structure for supporting a table and two benches;

a pair of benches of similar shape so as to be mutually stackable;

a plurality of thin brackets fastened to the underside of said benches, said brackets having slightly raised portions, said brackets being thin so as to avoid interfering with the stacking of the benches; and

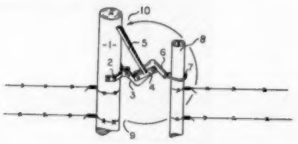
first bracket clip means operable to engage said frame structure and slip between said benches and the raised portions of at least some of said plurality of brackets, said bracket clip means comprising at the front of the bench a first member bolted around said frame structure with a first extension from said member adapted to slide under the raised portion of one of said plurality of brackets and at the rear of the bench a second member shaped to surround the frame structure with a bolt in said second member adapted to thread into a hole in one of said plurality of brackets.

3,847,425

WIRE GATE LATCH

Clair Francis Kirk, 856 Pine St., Wheatland, Wyo. 82201

Filed Sept. 13, 1972, Ser. No. 288,716
Int. Cl. E05c *19/14*
U.S. Cl. 292—247 **1 Claim**



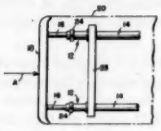
1. A gate device for drawing a movable gatepost to a rigid gatepost, said device comprising, a hinge bracket attached to said rigid gatepost, an upwardly opening V-angle bar pivotally secured to said hinge bracket at one end thereof, a pair of spaced parallel resistance arms, the other end of said V-angle bar pivotally secured between the said parallel resistance arms, a rotating handle attached to each of said resistance arms and extending substantially perpendicularly outwardly therefrom, an inverted downwardly opening V-angle bar, one end of said inverted V-angle bar being pivotally secured between the other end of said resistance arms and a wire loop secured to the other end of said inverted V-angle bar whereby said resistance arms can rotate approximately 180° to move said angle bars toward each other and with an over center action lock the movable gatepost adjacent the rigid gatepost with said wire loop encircling the end of the movable gatepost.

3,847,426

FRANGIBLE BUFFER APPARATUS FOR VEHICLES

Frank J. McGettigan, 426 Kathmere Rd., Havertown, Pa. 19083

Filed Sept. 17, 1971, Ser. No. 181,317
Int. Cl. B60r 19/02; B61g 11/16; F16f 7/12
U.S. Cl. 293—1 8 Claims



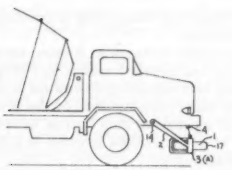
1. A bumper apparatus for motor vehicles such as automobiles or the like comprising a bumper, a pair of elongated telescoping members, at least one of said members being tubular and being open at one end and one of said members being connected to said bumper, means for securing the other of said members to the vehicle to extend generally horizontally from the vehicle frame, energy absorbing means arranged to resist the inward movement of said one member relative to said other member in response to the application of an impact load to said bumper, said energy-absorbing means including a crushable cartridge which is reduced in volume in response to said relative movement of said members, means associated with said non-tubular member for delivering said impact load to said cartridge, said cartridge being insertable into and removable from the interior of said tubular member through said open end, and cartridge removing means within said tubular member at the time of application of said impact load for engaging said cartridge to forcefully remove the same from said tubular member when said cartridge removing means is withdrawn from said tubular member.

3,847,427

SHIFTABLE SHOCK ABSORBING TIRE BUFFER

Cheston Lee Eshelman, 621 N.E. 30th Ter., Miami, Fla. 33137

Filed Dec. 1, 1972, Ser. No. 311,336
Int. Cl. B60r 19/10; B61f 19/04; B61g 11/12
U.S. Cl. 293—19 6 Claims



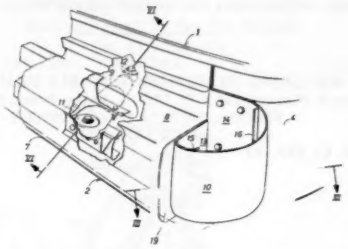
1. In an automotive highway vehicle having a front end, a carrier frame, strut members connected at one end to said frame and at the other end being pivotally connected to said vehicle front end, means for rigidly and removably mounting a vehicle wheel and wheel-mounted pneumatic tire in said carrier frame, a wheel and pneumatic tire mounted on said mounting means, and means connecting said vehicle front end and said carrier frame for pivotally moving said carrier frame and wheel and tire between a lowered operative bending position substantially parallel with the highway surface and a higher inoperative storing position non-parallel with the highway surface.

3,847,428

SHOCK ABSORBER

Manfred Uebelstadt, Ingolstadt, Germany, assignor to Audi NSU Auto Union A.G., Ingolstadt, Germany

Filed Aug. 9, 1972, Ser. No. 279,278
Claims priority, application Germany, July 17, 1971, 2135855
Int. Cl. B60r 19/06
U.S. Cl. 293—96 5 Claims



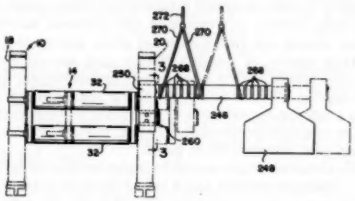
1. A shock-receiving device for motor vehicles, comprising a shock receiver, shock absorbers connected with the central portion of said shock receiver, means having joints connecting the shock absorbers with the motor vehicle and having a vertical swinging axis, said means comprising sheet springs which fix the shock receiver at its end to the motor vehicle, said sheet springs being C-shaped and curved about a vertical axis, and having strips located upon the inner side of said sheet springs as path limiters, the ends of said strips directed toward the inner side of the springs having a greater curvature than that of said springs.

3,847,429

BALANCE BAR FOR HANDLING WRAPPER ROLLS OF A STRIP COILING MACHINE

Norman L. Pim, Salem, Ohio, assignor to Gulf & Western Manufacturing Company, Southfield, Mich.

Filed May 7, 1973, Ser. No. 357,815
Int. Cl. B66c 1/22
U.S. Cl. 294—67 AA 1 Claim



1. A balance bar for use in removing and inserting a wrapper roll assembly along a horizontal linear path with respect to a wrapper roll supporting frame of a sheet metal coiling machine, which wrapper roll assembly includes a horizontal projection extending in the direction of said linear path comprising: an arm having opposite ends and an axis extending therebetween, plate means fixed on one end of said arm and extending in a direction laterally of said arm axis, said plate means having an aperture therein for receiving said projection, said aperture having an axis spaced from and parallel to said arm axis, said aperture and projection having mating cross-sectional contours other than circular, weight means secured on said arm and spaced from said one end in the

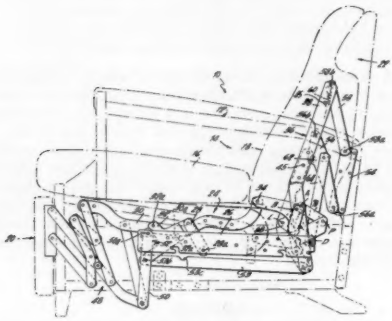
direction toward the other end of said arm for counterbalancing the weight of said wrapper roll assembly when said arm is supported in suspension between said one end and said weight means, said weight means extending in said lateral direction and having a center of gravity spaced from said arm axis in said lateral direction, said arm being circular in cross section, and a plurality of peripheral grooves axially spaced apart along said arm, a first pair of said grooves denoting locations for balanced horizontal suspension of said arm, plate means and weight means, and a second pair of said grooves denoting locations for balanced horizontal suspension of said arm plate means, weight means and wrapper roll assembly.

3,847,430

RECLINING CHAIR WITH MOVABLE HEADREST

Peter S. Fletcher, 200 N.W. 15th St., Delray Beach, Fla. 33444

Filed Oct. 20, 1972, Ser. No. 299,251
Int. Cl. A47c *1/02*
U.S. Cl. 297—61 **9 Claims**



1. A reclining chair of the multiple movement type having a base, and a body supporting means including a seat and a backrest, body-supporting mounting mechanisms mounting said backrest on said base for movement in a first movement phase from an upright sitting position to an intermediate, tilted sitting position and for further movement in a second movement phase from said intermediate tilting seated position to a fully-reclined position with said backrest moving rearwardly during said first movement phase and turning about a backrest center of rotation during said second movement phase, a legrest, and a legrest guiding mechanism mounting said legrest on said body-supporting means for movement from a retracted position to an extended, leg-supporting position in response to movement of said body-supporting means during said first movement phase;

a headrest mounted on said backrest for movement between a lowered position and a raised head-supporting position in response to movement of said body-supporting means during the said first movement phase;

headrest mounting and guiding means mounting said headrest on said backrest and headrest; and

headrest actuating means effectively interconnected between said backrest, said support and said headrest mounting and guiding means for actuating and control movement of said headrest, said actuating means comprising:

a. a driver lever pivotally mounted on said backrest at a driver lever pivot;

b. an actuating link pivotally connected at one of its ends to said base at a base pivot and at its other end to said driver lever at an actuating pivot;

c. a connecting link pivotally connected at its lower end to said driver lever at a driver pivot and operatively connected at its upper end to said headrest mounting and guiding means;

d. said base pivot of said actuating link being spaced from said backrest center of rotation and located on a line which bisects the angle included between a first line between the location of the actuating pivot when the chair is in the intermediate tilted sitting position and the backrest pivot and a second line between the backrest pivot and the location of the actuating pivot when the chair is in the fully-reclined position; said bisected angle being equal to the angle of rotation of said backrest about said backrest pivot during said second movement phase;

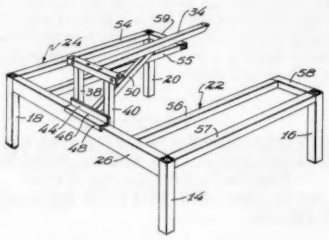
e. the location of the driver lever pivot of the driver lever being along a line which is the perpendicular bisector of a line drawn between the location of the actuating pivot in the upright sitting position and the location of the actuating pivot projected onto the backrest when said actuating pivot is in the intermediate tilted sitting position and with said backrest thereafter translated into its position when in the upright sitting position.

3,847,431

CANTILEVERED BOOTH CONSTRUCTION

Harold R. Nielsen, 615 Centennial Dr., Kenyon, Minn. 55946

Filed Jan. 2, 1973, Ser. No. 320,303
Int. Cl. A47b *39/00*
U.S. Cl. 297—158 **4 Claims**



1. A booth assembly comprising in combination:

a pair of benches;

a pair of generally rectangular frames, each of said frames supporting one of said benches and each of said frames having two legs extending downward from the portion of the frame supporting the rear of the bench, said frames connected together at their narrow ends by a single cross beam so as to support the benches in a generally parallel facing relationship;

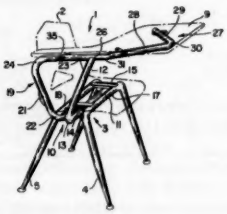
a table positioned between the benches;

a cantilevered bracket assembly for supporting said table, said bracket assembly comprising a first table supporting generally horizontal member extending generally perpendicular from a second table supporting generally horizontal member, two vertical support members extending downward from said second table supporting member to a position alongside the cross beam, and a diagonal brace extending from said first table supporting member to a fastening bracket connected between said two vertical support members, said fastening bracket shaped to fit over said cross beam in a position to hold the table generally level, said fastening bracket comprising a horizontal portion shaped to rest on top of the cross beam and a flanged portion shaped to fit around the back of the cross beam on the side opposite from said vertical members.

3,847,432
CHAIR TABLET ARM SUPPORT

Roy E. Jennings, Temple, Tex., assignor to Royal Seating Corporation, Cameron, Tex.

Filed July 17, 1972, Ser. No. 272,179
Int. Cl. A47b *39/00*
U.S. Cl. 297—160 **3 Claims**



1. In a desk arm chair of the type having an understructure including legs for supporting a seat having a rear a front, and a back projecting upwardly from the rear of the seat, and having a desk arm of substantial size in a plane above the seat, a support structure for supporting the desk arm, said support structure comprising, in combination;

a first cylindrical support tube, said first support tube including

a lower portion below the chair seat and secured to the understructure of the chair, and

an upwardly extending portion

at one side of the seat, joined to the lower portion at a bend and slanting away from the rear of the seat, said upwardly extending portion terminating at an upwardly facing u-shaped end;

a second cylindrical support tube including

a lower portion below the seat and secured to the understructure of the chair,

a first intermediate portion extending upwardly at said one side of the seat, and slanting rearwardly in a direction away from said upwardly extending portion of said first support tube and away from the front of the seat, said first intermediate portion extending upwardly and rearwardly to a location closely adjacent the plane of the back of the seat,

a generally horizontal second intermediate portion, above the level of the seat, joined to the first intermediate portion at a bend and extending over seated in, and abutting said upwardly facing u-shaped end of said upwardly extending portion of said first support tube, and

a front portion extending transversely of the chair, joined to said horizontal portion at a bend closely adjacent to and beyond the location of of engagement of the horizontal intermediate portion with the upwardly extending portion of the first support tube, in a direction away from the rear of the seat, and in a common generally horizontal plane with said horizontal portion, said front portion including a forwardly and inwardly extending portion extending away from the rear of the seat and inwardly of a vertical plane including said one side of the seat, and joined to a rearwardly and outwardly extending portion extending generally toward the rear of the seat and away from said vertical plane including said one side of the seat and having a free end so that said front portion forms a v shaped support cantilevered from said horizontal portion of said second support tube;

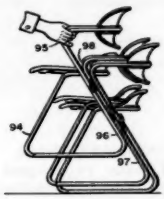
weld means securing said upwardly facing end of said upwardly extending portion of said first tube to said horizontal portion of said second tube, whereby said slanting upright portions of said first and second tubes cooperate with said horizontal portion of said second tube to form a rigid inverted generally triangularly shaped upright structure at one side of the chair; and

means securing the desk arm to said second support tube along its horizontal and front portions at several locations.

3,847,433
STACKING CHAIR

Hugh C. Acton, Augusta; Robert L. Knapp; Arthur L. Van Ryn, both of Grand Rapids, and Kenneth W. Hozeski, Grandville, all of Mich., assignors to American Seating Company, Grand Rapids, Mich.

Filed July 12, 1973, Ser. No. 378,688
Int. Cl. A47c *3/04*
U.S. Cl. 297—239 **11 Claims**

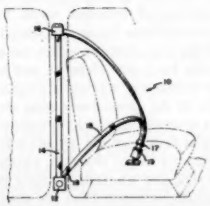


1. A chair comprising: a frame formed from a continuous piece of tubing and including a horizontal curved portion forming a wrap-around back panel support, said tubing extending horizontally forwardly of said wrap-around portion to provide arm rests, thence extending downwardly and rearwardly to provide inclined arm rest supports and rear leg portions, thence forwardly to provide horizontal floor runners, thence upwardly and rearwardly to provide forward legs and connected at the upper portion of said forward legs to the juncture between said arm rest support and the associated rear leg; a curved, contoured back panel secured to the wrap-around portion of said frame; a seat panel; tubular seat frame means connected to said seat panel for supporting the same; a brace connected to said tubular frame at the upper portion of said forward legs to stabilize said frame and to support said seat when it is in a lowered, occupied position; and means for pivotally connecting said seat frame to said frame whereby said seat panel may be selectively lowered to an occupied position wherein said seat panel is supported by said brace, or raised, thereby permitting an occupant to step between said runners to permit passage of another person down a row.

3,847,434
VEHICLE OCCUPANT RESTRAINT SYSTEM

Per Olaf Weman, Haslah, Germany, assignor to Sigmatex A.G., Basel, Switzerland

Filed May 2, 1973, Ser. No. 356,659
Int. Cl. A62b *35/02;* **B60r** *21/10*
U.S. Cl. 297—389 **17 Claims**



1. A vehicle occupant restraint system comprising:

a retractor mounted adjacent the floor of said vehicle and having seat belting attached thereto,

means for retracting said seat belting onto said retractor and for permitting said seat belting to be protracted from said retractor and

bracket means mounted against a surface in said vehicle at a location above the level of said retractor and having means therein to allow said seat belting to pass therethrough, said seat belting extending from said retractor through said bracket means and being extendible from said bracket means to a position remote therefrom such that said seat belting is adapted to extend at least across the shoulder of an occupant,

said bracket means including,

locking means movable into a lock position to prevent extension of said seat belting from said bracket means after said seat belting is secured across the shoulder of the occupant,

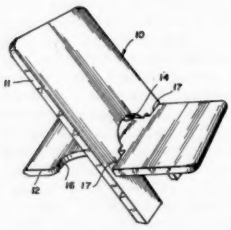
said bracket means being pivotable in a plane which intersects the plane of said surface.

3,847,435

TWO-PIECE CHAIR

Harvey G. Skinner, Ligonier, Pa., assignor to Westmoreland Plastics Company Division of Vulcan, Inc., Latrobe, Pa.

Filed July 2, 1973, Ser. No. 375,494
Int. Cl. A47c *4/02*
U.S. Cl. 297—443 **4 Claims**



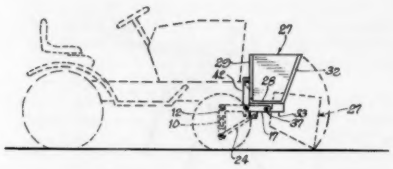
1. A two-piece chair comprising a back-rest element and a seat element adapted for interfitting engagement to form a chair, wherein the improvement comprises a back-rest element made of sheet material of substantially uniform thickness and having a T-slot therein which opens at one end constituting the ground-engaging end thereof, and a seat element made of sheet material of substantially uniform thickness having neck portion of reduced width between the ends thereof, the two elements being interfitted by inserting the neck portion of the seat element within the transverse portion of the T-slot in the back-rest element, and wherein the T-slot of the back-rest element comprises a longitudinally extending slot which opens at the ground-engaging end of the element, a transverse slot intersecting the longitudinally extending slot, and a semi-circular recess on the inward side of the transverse slot having a diameter larger than the width of said longitudinally extending slot, and wherein the neck portion of the seat element has a width narrower than the diameter of the semi-circular recess whereby said seat element may be turned into a position at a right angle to the back-rest element prior to inserting the neck portion into the transverse slot of the T-slot in the back-rest element.

3,847,436

TOTE BOX ATTACHMENT FOR SUBURBAN TYPE TRACTOR

Jay H. Reid, Barrington, Ill., assignor to Sears, Roebuck and Co., Chicago, Ill.

Filed Apr. 4, 1973, Ser. No. 347,786
Int. Cl. B60p *1/28*
U.S. Cl. 298—1 C **3 Claims**



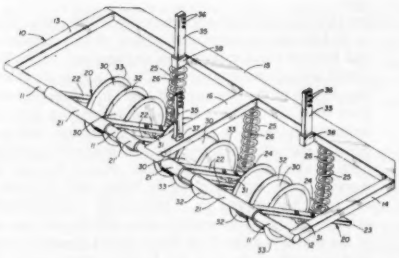
1. In combination with a vehicle having ground engaging wheels and a forward axle, a pair of spaced vertically extending mounting brackets carried on said axle, a supporting frame comprising a pair of spaced parallel arms detachably connected to the upper end of said brackets and extending horizontally and forwardly of said axle, a pair of brace members detachably connected to the lower end of the brackets below the axle and to the forward ends of the arms, a tote box having bottom, rear, side and front walls and pivotally attached to the forward ends of said arms for rocking movement about an axis substantially parallel to the longitudinal axis of the axle, said tote box being unbalanced so as to tilt in a forward direction, a latching element carried on said rear wall, cooperating latching means pivotally supported on said frame, means biasing said latching means to engage said latching element to lock said tote box in an upright position, said latching means being manually operable to effect disengagement from said latching element to permit rocking movement of said tote box to a position where the forward lip of the front wall rests on the ground surface to discharge the contents of the tote box forwardly of the vehicle.

3,847,437

ICE BREAKER ATTACHMENT FOR ROAD MAINTENANCE VEHICLES

Clarence L. Williams, 615 Knight Ave. N., Thief River Falls, Minn. 56701

Filed Dec. 26, 1973, Ser. No. 428,437
Int. Cl. E01h *5/12*
U.S. Cl. 299—25 **8 Claims**



1. An ice breaker attachment for road maintenance vehicles comprising

a. a main frame having a front rail,

b. a plurality of sub-frames each having a tubular front member pivotally mounted on the front rail of the main frame for rocking movement thereon, a pair of spaced

apart parallel side arms connected to the tubular front member, and a cross piece connecting the rear ends of the arms,

c. a roller provided with annular radially extending fins, said roller being rotatably mounted on and between the side arms of a pair, and

d. resilient means between the rear end of the sub-frame and the main frame exerting pressure on the sub-frame and roller mounted thereon.

3,847,438

MINERAL WINNING MACHINE HAVING CONTINUOUS HEIGHT ADJUSTMENT TO ACCOMMODATE VARYING SEAM THICKNESS

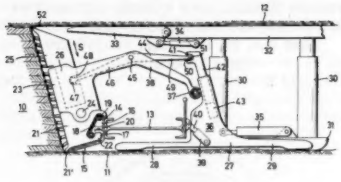
Herbert Huttenbrauck, Hillering; Berthold Ostrop, Thunen; Mustafa Soliman, Lunen-Sud, and Helmut Poklekowski, Lunen, all of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Westfalia, Germany

Filed May 1, 1973, Ser. No. 356,228

Claims priority, application Germany, May 2, 1972, 2221342; May 2, 1972, 2221465

Int. Cl. E21c *27/35*

U.S. Cl. 299—34 **20 Claims**



1. A mining installation comprising a conveyor extending alongside a face to be worked, a guide on said conveyor; a planer having a base guided for movement along said guide, a superstructure articulated to said base, and an upper part supported on the superstructure and adjustable relative thereto, said superstructure having an arm extending rearwardly across the conveyor, a guide member extending parallel to said conveyor, along which said arm is adapted to slide, a control member extending generally parallel to said guide member, means carried by said planer and adapted to follow said control member and to adjust the position of said upper part as it varies in position in contact with the control member.

3,847,439

ROTARY COAL CUTTERS WITH WATER JET ORIFICES

Thomas Jeffrey Allen, Bessacarr Doncaster, England, assignor to Fletcher Sutcliffe Wild Limited, Yorkshire, England

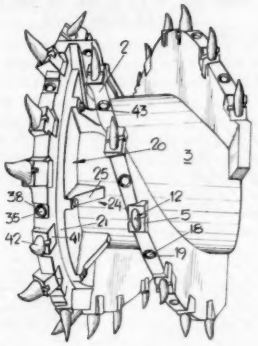
Filed Dec. 11, 1972, Ser. No. 313,870

Claims priority, application Great Britain, Dec. 17, 1971, 58851/71

Int. Cl. E21c *25/10*

U.S. Cl. 299—81 **4 Claims**

1. A rotary coal cutter comprising a drum, a cutting implement mounted on the drum and having a peripheral face adapted for mounting picks in a circle about the drum axis, and a helical guide wall for cut coal mounted co-axially on the drum adjacent the cutting implement, wherein the improvement comprises the cutting implement defining orifices and passages leading from an interior part of the drum to the orifices and wherein the cutting implement includes a plurality



of brackets spaced around the drum and serving to mount the implement on the drum, each bracket defining at least one of said passages leading to a corresponding orifice in the bracket.

3,847,440

WHEEL FITTING DEVICE

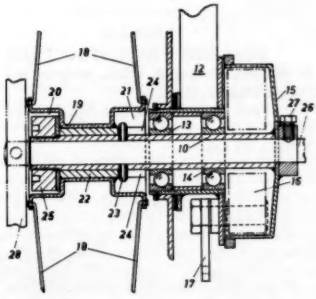
Bertil Mattsson, Goteborg, Sweden, assignor to HEA Rehab AB, Groteberg, Sweden

Filed May 29, 1973, Ser. No. 364,243

Claims priority, application Sweden, May 30, 1972, 7059/72

Int. Cl. B60b *37/00*

U.S. Cl. 301—1 **4 Claims**



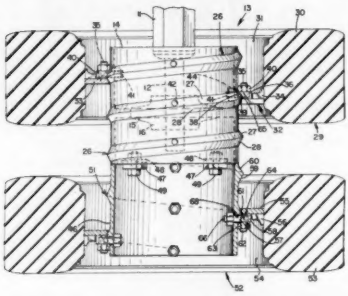
1. A device for fitting a brake-provided wheel in an easily detachable manner to a wheel chair or a similar transport means having a load-carrying body, comprising a bearing assembly mounted to the load-carrying body, a tubular wheel shaft rotatably supported in said bearing assembly, said wheel shaft having opposite ends, a brake mechanism non-rotatably fitted to one end of said tubular wheel shaft, and a wheel hub non-rotatably yet detachably fitted to the opposite end of said tubular wheel shaft.

3,847,441

POWER ADJUSTABLE TRACTOR WHEELS

James Morkoski, Memphis, Tenn., and Louis B. Garriott, Jr., Munster, Ind., assignors to International Harvester Company, Chicago, Ill.

Filed Mar. 4, 1974, Ser. No. 448,104
Int. Cl. B60b 23/12
U.S. Cl. 301—9 TV 6 Claims



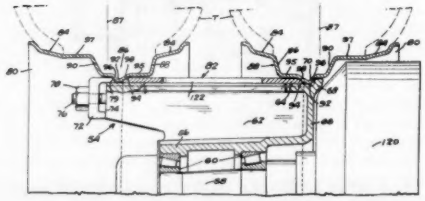
1. An axially adjustable wheel assembly for a vehicle having a driven axle comprising: a tire-carrying rim member, a cylindrical mounting member concentric with said rim member having an external diameter less than the internal diameter of said rim member and an axial length at least as great as that of said rim member and secured to the driven axle for rotation therewith, helically arranged track means on the periphery of said mounting member, complementary helically arranged rail means on said rim member cooperatively engageable with the helical track means on said mounting member to accommodate rotation and simultaneous axial adjustment of said rim member relative to said mounting member, and means for securing the rim member to the mounting member at selected adjusted positions movable in an axial direction and reacting against one of said members to exert a force radially against the other of said members to effectively increase the distance between said members and frictionally lock them together.

3,847,442

DUAL RIM WHEEL STRUCTURE

Lloyd D. Masser, Muskegon, Mich., assignor to Lear Siegler, Inc., Santa Monica, Calif.

Filed Dec. 6, 1972, Ser. No. 312,725
Int. Cl. B60b 23/00
U.S. Cl. 301—13 SM 2 Claims



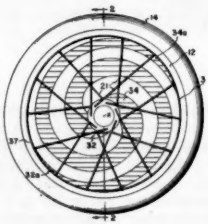
1. Dual rim wheel structure which comprises,
two drop center rims each having axially spaced tire bead sets and an intermediate drop center defining a locking angle and an abutment angle disposed in axially opposite directions,
said locking angle and abutment angle extending respectively along a relatively smaller angle and a relatively steeper angle to the axis of said rim,
a wheel having abutment flange means adjacent its axially inward end shaped to fit said abutment angle,
said rims being mounted on said wheels with said abutment angle of one rim engaged against said flange means,
spacing means effective to space said rims axially apart,
and clamp means on said wheel engaging axially against the drop center of the other rim to secure said rims on said wheel,
said wheel having spokes on which said rims and spacing means are mounted, said spacing means having means engaged circumferentially against side portions of at least certain of said spokes to constrain said wheel and spacing means against relative circumferential movement,
said spacing means having shoulder means engaged circumferentially against lug means on said rims to constrain said spacing means and rims against relative circumferential movement,
said spacing means having shoulders spaced apart to pass a valve stem from said drop center to an exposed location radially inward thereof,
said shoulder means being provided on said spaced apart portions.

3,847,443

SPOKED WHEEL AND WHEEL ORNAMENT

Francis R. Laurion, 211 Sherman St., Vassar, Mich. 48768

Filed Dec. 29, 1972, Ser. No. 319,699
Int. Cl. B60b 7/02
U.S. Cl. 301—37 R 7 Claims

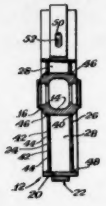


1. In combination;
a wheel for a vehicle, such as a bicycle and the like, comprising:
an annular rim mounting a ground-engaging tire;
a central hub for mounting the wheel on a vehicle for rotation about its axis; and
first and second groups of axially offset, circumferentially spaced spokes mounting the hub on said rim; and
a wheel decorating ornament comprising a one-piece, annular sheet of generally planar, flexible material interposed between said axially offset groups of spokes and radially disposed between said rim and said hub, said sheet of material having an axle accommodating opening at its center and one uninterrupted slit extending from said axle accommodating opening to the periphery of said sheet, the stiffness of said material being such that the portions of said sheet immediately adjacent said slit are normally in abutting relation with each other and are normally aligned in the same plane but are freely axially movable relative to each other out of said plane enabling the annular sheet of material to be quickly and easily removed from a position between said axially offset groups of spokes.

3,847,444
WHEEL MANUFACTURE

Ludwig E. Aker, Hamilton, Ontario, Canada, assignor to International Harvester Company, Chicago, Ill.

Division of Ser. No. 276,985, Aug. 1, 1972, Pat. No. 3,762,012.
This application June 18, 1973, Ser. No. 371,217
Int. Cl. B60b 3/08
U.S. Cl. 301—63 DD 6 Claims



1. Disk wheel, including plural, concealed uniplanar spokes therein, the spokes consisting of individual radially positioned flat bars, and further including, in combination with said spokes:

disks positioned oppositely to one another, and upon opposite sides of the plural uniplanar spokes;

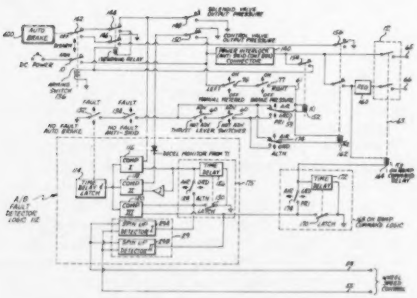
means in a plurality of zones bonding edges of the uniplanar spokes radially to zones of the disks adjacent the inner faces thereof, whereby to rigidify the spokes endwise against buckling out of plane under radial loads imposed on the wheel; and

a rim connected in position to the disks and to the spokes, and fabricated of plural segments, end-to-end connected and bonded into said position contiguously encircling the disks and mutually normal to the spokes concealed therebeneath.

3,847,445
AIRCRAFT AUTOMATIC BRAKING SYSTEM HAVING AUTO-BRAKE CONTROL LOGIC

Sherman M. Bissell; Garrett H. De Vlieg, both of Bellevue, and Johan N. Hopland, Renton, all of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 12, 1973, Ser. No. 415,058
Int. Cl. B60t 8/08
U.S. Cl. 303—21 AF 6 Claims



1. An aircraft automatic braking system comprising in combination:

first means for providing a brake pressure control signal;

automatic braking pressure modulating valve means responsive to said brake pressure control signal for metering automatic braking pressure to first shuttle valve means for application of brakes on one side of the aircraft and second shuttle valve means for application of brakes on the other side of the aircraft;

first manually controlled pressure metering valve means coupled to said first shuttle valve means and second manually controlled pressure metering valve mean coupled to said second shuttle valve means;

shutoff valve means for transmitting hydraulic power to said automatic braking pressure modulating valve means; and automatic brake control logic circuit means including:

arming means for applying D.C. power to said first means, said arming means including arming switch means and arming relay means;

a first arming circuit for energizing a first relay to interrupt holding power to said arming switch means and said arming relay means in response to a disarm signal thereby releasing automatic braking pressure;

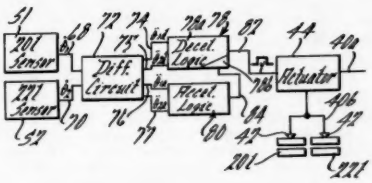
a second arming circuit for energizing a second relay and interrupting power coupled to a third relay in response to said disarm signal thereby releasing automatic braking pressure;

ON-RAMP COMMAND logic circuit means coupled to said third relay for energizing said third relay when said first and second arming circuits are in an armed condition, thereby opening said shutoff valve and enabling said automatic braking pressure valve to regulate automatic braking pressure.

3,847,446
SKID CONTROL SYSTEM FOR TANDEM AXLED VEHICLES

Ronald S. Scharlack, Watertown, Mass., assignor to Kelsey-Hayes Company, Romulus, Mich.

Filed Dec. 23, 1971, Ser. No. 211,190
Int. Cl. B60t 8/12
U.S. Cl. 303—21 EB 7 Claims



1. A skid control system for a pair of tandemly located, proximately spaced, fore and aft wheels of a wheeled vehicle having a pressurized fluid actuated braking system comprising:

control means for detecting the occurrence of an incipient wheel skid condition at at least one of the wheels and providing an output signal in response thereto, said control means including a sensor means located at only one of said fore and aft wheels for providing rotational speed information, and control module means for receiving said information and providing said output signal in response to said information; and common actuating means responsive to said output signal for controlling the pressure to the brakes at both of the fore and aft wheels.

3,847,447
ADAPTIVE BRAKING SYSTEM

James M. Needham, and Delbert R. Elliott, both of South Bend, Ind., assignors to The Bendix Corporation, South Bend, Ind.

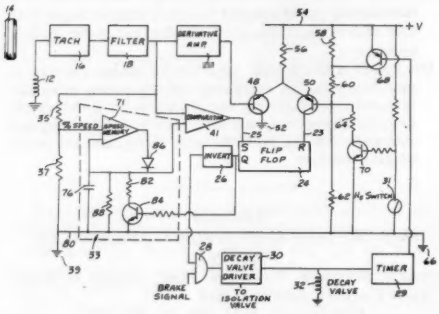
Filed June 15, 1972, Ser. No. 263,518
Int. Cl. B60t 8/12
U.S. Cl. 303—21 CG 5 Claims

1. In a wheeled vehicle having a brake for braking a corresponding wheel, an adaptive braking system for controlling

said brake to prevent skidding of said corresponding wheel comprising:

electrically operated valve means for relieving braking pressure in said brake controlling said corresponding wheel to prevent skidding of the latter; and

control means for actuating said valve means including first means for generating a speed signal proportional to the angular velocity of said corresponding wheel, second means for differentiating said speed signal to generate an acceleration signal proportional to acceleration and deceleration of said corresponding wheel, means for generating first and second bias signals having predetermined values which are independent of fluctuations in said speed signal, said acceleration and deceleration signals, and the rate of deceleration of the vehicle, said means for



generating said first and second bias signals being responsive to actuation of said valve means to change the values of said first and second bias signals by predetermined amounts which are independent of fluctuations in said speed and acceleration signals and of deceleration of said vehicle, switching means activating said valve means when said acceleration and deceleration signal drops below the value of the corresponding bias signal and terminating said valve means when said acceleration and deceleration signal exceeds the value of the then corresponding bias signal, bias means switchable from a first state to transmit said first bias signal to said switching means to a second state transmitting said second bias signal to said switching means, and means responsive to vehicle deceleration for switching said bias means between said first and second states.

3,847,448

APPARATUS FOR ANTISKID CONTROL OF A HYDRAULIC BRAKE SYSTEM

Toshiaki Okamoto; Masammi Inada, and Koji Nishida, all of Toyota, Japan, assignors to Aisin Seiki Company Limited, Aichi-ken and Sharp Kabushiki Kaisha (Sharp Corporation), Osaka, both of, Japan

Continuation of Ser. No. 888,297, Dec. 31, 1969, abandoned. This application Oct. 10, 1972, Ser. No. 297,876

Int. Cl. B60t *8/08*

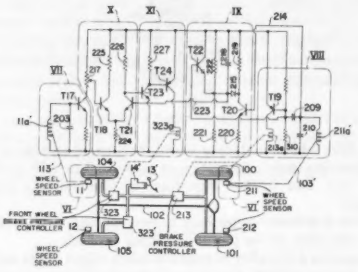
U.S. Cl. 303—21 BE **7 Claims**

1. An apparatus for the antiskid brake control of a plurality of front and rear wheels of a powered and wheeled vehicle, comprising means for sensing the revolutions per unit time of each of said wheels and for issuing output signals responsive to the sensed wheel revolutions, and an actuator for regulating the respective wheel brake pressure in response to said output signals, said apparatus further comprising in combination:

a. a first means for delivery of an electrical voltage in response to the said output signal corresponding to the revolutions of one of the wheels, for providing a wheel decelerating signal thereof;

b. a second means for generating a brake pressure control signal for effecting a pressure control action at the brake means for said one wheel, when said wheel deceleration signal exceeds a predetermined value;

c. a third means comprising a capacitor for accumulation of an output signal corresponding to the revolutions of a pair of wheels, and a discharge circuit for discharging the charge accumulated in said capacitor in response to the acceleration of said one wheel when said brake means for said one wheel is released, thereby establishing a pseudo vehicle speed signal;



d. a fourth means for generating a voltage in response to said output signal from a remaining one of said wheels, thereby providing a wheel speed signal for said remaining wheel;

e. a fifth means for obtaining a comparison signal upon comparing said remaining wheel speed signal with said pseudo vehicle speed signal; and

f. a sixth means for generation of a brake pressure control signal responsive to said comparison signal for control of the brake pressure applied to said remaining vehicle wheel.

3,847,449

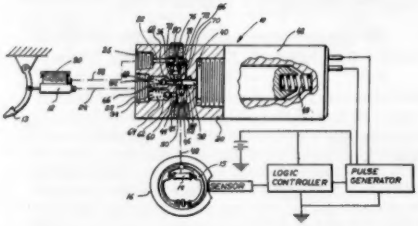
SOLENOID POWERED BRAKE PRESSURE MODULATOR

Carmeli Adahan, 1930 Vine St., No. 303, Berkely, Calif. 97709

Filed June 8, 1973, Ser. No. 368,297

Int. Cl. B60t *8/06*

U.S. Cl. 303—21 F **15 Claims**



1. A brake pressure modulator operable in response to signals of a wheel lock condition and the end of the wheel lock condition for use in a hydraulic brake system having a brake master cylinder, a brake applying cylinder and a reservoir of fluid and comprising: a housing having a fluid inlet port, a fluid outlet port, and a reservoir port adapted to be connected to the master cylinder, brake applying cylinder and reservoir,

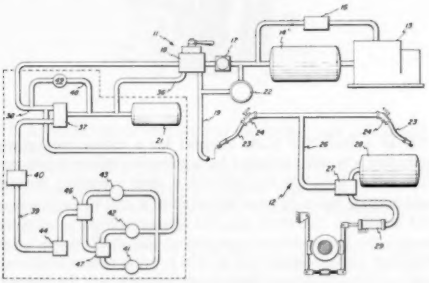
respectively, valve means for relieving fluid pressure from said outlet port to said reservoir port in response to a first signal of a wheel lock condition, pump means delivering fluid under pressure to said outlet port in response to a second signal at the end of said wheel lock condition, and solenoid means for operating said valve means in response to said first signal and for operating said pump means in response to said second signal.

3,847,450

CONTROL APPARATUS FOR AUTOMATIC AIR BRAKE SYSTEMS

Paul T. Ryan, Erie, Pa., assignor to General Electric Company, Erie, Pa.

Filed Dec. 26, 1973, Ser. No. 427,782
Int. Cl. B60t *15/20*
U.S. Cl. 303—81 **12 Claims**



1. An improved pneumatic brake system of the type having a source of compressed air, means for charging to predetermined pressures from the source, both an equalizing reservoir and a brake pipe, equalizing valve means sensitive to the pressure difference between the brake pipe and the equalizing reservoir to exhaust the former to pressure equal to that in the latter, exhaust valve means for selectively exhausting the reservoir to predetermined pressures, and a plurality of brake cylinders operably communicating with the brake pipe to apply brakes in response to pressure reduction therein, wherein the improvement comprises:

a. an exhaust manifold selectively communicating with the equalizing reservoir through the exhaust valve;

b. a plurality of pressure regulators for individual connection to said exhaust manifold, said pressure regulators being preset to various predetermined constant pressures;

c. control valve means for connecting said plurality of pressure regulators, one at a time, to said exhaust manifold so as to allow for the selective regulation of pressure in said exhaust manifold to any one of said predetermined constant pressures, thereby providing a plurality of selected degrees of braking effort to be applied in the system.

3,847,451

FLAT TRACK SHOE WITH TAPERED END RIBS

Allan Leslie Freedy; Calvin Lyle Miller, both of Aurora, and Fred Eugene Simpson, Oswego, all of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

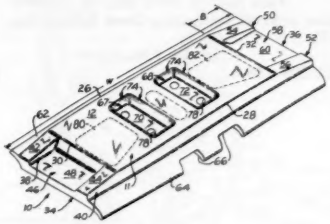
Filed Dec. 4, 1972, Ser. No. 311,877
Int. Cl. B62d *55/26*
U.S. Cl. 305—54 **9 Claims**

1. A track shoe for a track-type tractor comprising:

a base portion defining a generally flat lower surface defining a forward, a rearward, and a pair of sideward edges; a pair of end portions extending from the base portion, the lower surfaces of which are angled upwardly from the lower surface of the base portion;

the sideward edges interconnecting the lower surface of the base portion and the lower surfaces of the end portions; the sideward edges being gradually curved and contoured to smoothly connect the lower surface of the base portion with the lower surfaces of the end portions;

each end portion defining a rib, the upwardly angled surface of that end portion comprising the lower surface of said rib;



the forward and rearward edges of the lower surface of the base portion being substantially parallel;

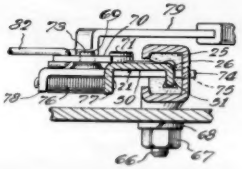
the rib defined by each end portion extending substantially parallel to the forward and rearward edges of the lower surface of the base portion, the rib defined by each end portion further defining an edge portion extending generally continously from one of said forward and rearward edges.

3,847,452

SLIDE MECHANISM WITH RESTRAINTS AGAINST TRANSVERSE MOVEMENT

Arthur J. Harder, Jr., Franklin Park, Ill., assignor to Coach and Car Equipment Corporation, Elk Grove Village, Ill.

Continuation-in-part of Ser. No. 247,681, April 26, 1972. This application Mar. 2, 1973, Ser. No. 337,440
Int. Cl. F16c *17/00, 21/00*
U.S. Cl. 308—6 R **14 Claims**



1. A slide mechanism comprising:

a first member;

a second member;

a bearing element on said first member;

means on said bearing element and on said second member cooperating to mount said second member for sliding movement relative to said bearing element;

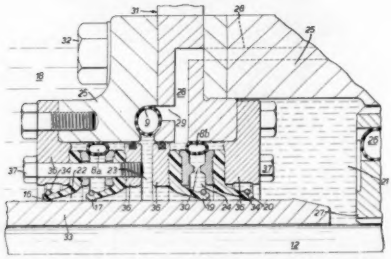
said bearing element comprising means for restraining said second member against movement other than in the direction of said sliding movement;

said bearing element and said second member comprising a planar contacting surface on one of the two and a convex contacting surface on the other of the two;

and means on said bearing element and on said second member cooperating to restrict contact between the two

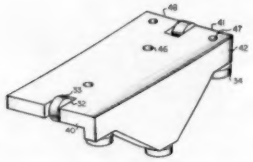
to contact between a convex surface on one of the two and a planar surface on the other of the two at all locations of contact, thereby minimizing friction between the two.

3,847,453
SHAFT ARRANGEMENTS
Colin Wray Herbert, 44 High St., Stokesley, England
Filed Jan. 12, 1973, Ser. No. 323,096
Claims priority, application Great Britain, Jan. 13, 1972, 1674/72
Int. Cl. F16c *33/74*
U.S. Cl. 308—36.1 **11 Claims**



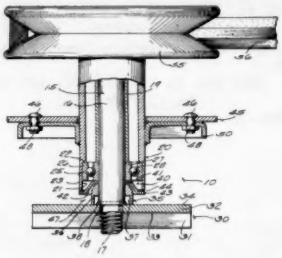
1. In combination, a shaft, means defining a liquid chamber surrounding the shaft, a seal controlling the flow of liquid along the shaft to or chamber, the shamber, and an elastic-walled envelope in the chamber defining independently of the seal a gas space for accommodating variations in liquid pressure by change in gas volume.

3,847,454
TRANSLATIONAL MOTION APPARATUS
Ivan Pejcha, 428 Montclair Dr., Santa Clara, Calif. 95051
Filed July 11, 1973, Ser. No. 378,096
Int. Cl. F16c *17/00*
U.S. Cl. 308—6 R **10 Claims**



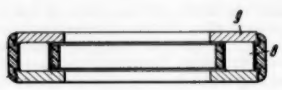
1. Translational motion apparatus comprising:
a base;
a rectangular rail, one of the sides of the rail including a shoulder projection and the other side and the top being substantially planar, said rail being attached to the base by mounting flanges;
a symmetrical carriage having two opposed sides and a top oriented about said rail in substantially inverted-U cross-section;
a plurality of bearings disposed on said carriage with at least two bearings riding on the top of said rail and with at least three of said bearings riding on said other side of the rail and with at least one of said bearings riding on the lower surface of the shoulder projection from said rail; and
moving means for positioning the carriage along the rail.

3,847,455
MOWER BLADE SADDLE ASSEMBLY
Douglas J. Vandermeulen, Martin, and Siegfried K. Weis, Grand Rapids, both of Mich., assignors to C. L. Frost & Son, Inc., Grand Rapids, Mich.
Filed Nov. 19, 1973, Ser. No. 416,864
Int. Cl. F16c *33/82*
U.S. Cl. 308—187.1 **15 Claims**



1. In a shaft and blade support for a rotary lawnmower including a housing member having bearing means positioned adjacent at least one end thereof, a shaft extending through said housing and supported for rotation in said bearing means, and means on siad shaft adapted for connection to a driving means, the improvement comprising: said shaft having a first diameter portion supported in said bearing means and a second portion of reduced diameter at said one end, the intersection of said first and said second diameters forming an annualr shoulder; a blade support member positioned over said reduced diameter portion into abutment with said shoulder and welded to said shaft about said first diameter; and spacer means on said shaft positioned between said bearing means and said blade support.

3,847,456
CYLINDRICAL ROLLER THRUST BEARING
Jorg Schwarzbich, 4801 Hager 38A, Germany
Filed Dec. 1, 1972, Ser. No. 311,281
Claims priority, application Germany, Mar. 16, 1972, 2212621
Int. Cl. F16c *33/46*
U.S. Cl. 308—217 **21 Claims**

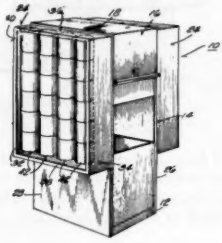


1. A cylindrical roller thrust bearing comprising in combination:
a pair of substantially planar discs of about the same size and spaced parallel each to the other with each normal to and positioned about a common axis,
a ring of rollers positioned in a cage member between the discs with each of the rollers arranged radially relative the axis and with the discs providing a raceway for the rollers, each of the discs having a margin,
said bearing cage having an elastically deformable lip surrounding the margin with edges and having an extended condition in which the edges fit snugly over the margins so that the discs and rollers thereby are held in position.

3,847,457
TAMPER PROOF STORAGE AND DISPENSING UNIT FOR CANS OF OIL AND THE LIKE

Roland P. Kleppin, Greenfield, Wis., assignor to Display Corporation International, Milwaukee, Wis.

Filed Aug. 20, 1973, Ser. No. 389,816
Int. Cl. A47b *81/00;* **E05b** *65/46*
U.S. Cl. 312—100 **9 Claims**



1. A tamper-proof storage and dispensing unit comprising, in combination,

a generally open frame having oppositely facing first and second sides and a depth between said sides,

a plurality of generally elongated members arranged vertically within said frame,

said elongated members being generally U-shaped in transverse cross section and including means to support articles in a stacked condition within the area defined by said U-shaped elongated members,

means mounting each of said elongated members for rotation about a vertical axis between a closed position wherein the open sides of said U-shaped members are directed toward said first side of said frame and an open position wherein said open sides of said U-shaped members are presented to said second frame side,

actuating means connected to said elongated members and operative to rotate said elongated members about said axes to alternatively move said elongated members to said open and closed positions,

means connected to said frame and substantially covering said first side of said frame excpept for an access area through which said actuating means is accessible,

closure means including cabinet means operatively associated with said first side of said frame at said access area and said cabinet means including a cover and means mounting said cover for pivotal movement between open and closed positions to alternately cover and expose said actuating means,

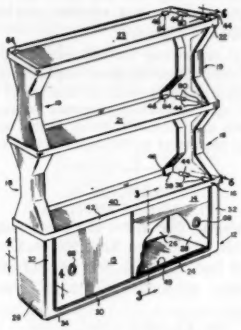
and locking means for locking said actuating means against movement when said actuating means is in a position corresponding to either said open or closed position of said elongated members so that said elongated members cannot be rotated by direct manipulation thereof through said second side of said frame.

3,847,458
STORAGE UNIT

Ralph M. Nowak, Wilbraham, Mass., assignor to Tucker Manufacturing Corporation, Columbus, Ind.

Filed Dec. 26, 1973, Ser. No. 427,924
Int. Cl. A47b *87/00*
U.S. Cl. 312—108 **9 Claims**

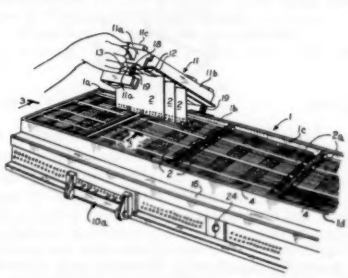
1. A storage unit, comprising a cabinet having interconnected bottom, rear, and side walls, a lower track on said bottom wall adjacent the front thereof, a plurality of first hooks on said rear and side walls, a first shelf having a plurality of first slots in which said first hooks are received for mounting said first shelf on the top of said cabinet, an upper track on said first shelf adjacent the front thereof, a pair of doors slidably carried in said upper and lower tracks, a pair of end panels at the opposite ends of said first shelf and projecting upwardly therefrom, each of said end panels having a pair of fingers lockingly received in a pair of said first slots for mounting said end panels on said first shelf, a plurality of second hooks on the upper end of each of said end panels, and a second shelf carried on the upper ends of said end panels, said second shelf having a plurality of second slots formed therein in which said second hooks are received for connecting said second shelf to said end panels.



3,847,459
HANGING FILING-CARD CABINETS

Eduardo Hegedus, and George Hegedus, both of Avenida Thomas Edison, 406/448, Sao Paulo, Brazil

Filed Aug. 24, 1972, Ser. No. 283,357
Int. Cl. A47b *65/00;* **B07c** *5/34*
U.S. Cl. 312—184 **4 Claims**



1. A hanging filing card system comprising

a frame including spaced upper rails,

a plurality of magnetic metal hangers having end portions removably supported on said upper rails, each of said end portions including an extreme tip,

a filing card having an upper end secured to each of said metal hangers between said end portions leaving portions of said hangers exposed, thereby hanging freely on said hangers, and having at the bottom a plurality of a group of holes and a plurality of slots open at their lower end, stiletto means inserted selectively into said holes and said slots of said cards, respectively, and

magnetized extractor means including spaced parallel magnetic rails for engaging said metal hangers at said exposed portions for withdrawing cards through which said stilettos pass only through slots, by mutual magnetic attraction of said magnetic rails of said magnetized means and said

metal hangers, and for being moved upwardly from said frame,

said upper rails being substantially of U-shaped cross-section having an innermost supporting section on which said end portions are supported and outermost stop wall slightly spaced from an extreme tip of a corresponding of said end portions when said metal hanger is aligned horizontally, and abutting with said tip in the event a corresponding filing card is tilted, whereby said hangers return to said horizontal alignment,

said innermost supporting sections which support the end portions of each of said hangers, respectively, being lower in height than said stop walls of said upper rails, and

a plurality of rigid separators, disposed between groupings of said cards and including holes at the bottoms corresponding in alignment to the holes in said cards.

3,847,460

PLASTIC FURNITURE

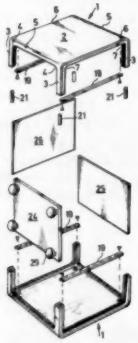
Karl-Adolf Weidt, An Der Alche, Germany, assignor to Fritz Schaffer GmbH, Neukirchen Kreis Siegen, Germany

Filed Dec. 27, 1972, Ser. No. 318,800

Claims priority, application Germany, Dec. 29, 1971, 2165324

Int. Cl. A47b *47/00, 57/08*

U.S. Cl. 312—257 R **17 Claims**



1. A frame for a piece of furniture, comprising a pair of identical structural foam plastic modules, having spaced and opposed rectangular flat panel portions closing the ends of said frame, spaced beam members extending transversely between and interconnecting said panel portions, said beam members having end segments consisting of aligned stump-like legs formed on and in one piece with said panel portions, said stump-like legs forming the entire cross sections of said beam members, means defining grooves on the inner surfaces of the panel portions and continuing along the adjacent inner surfaces of said legs, and filler pieces inserted in aligned grooves of the panel portions and legs for closing remaining sides of said frame.

3,847,461

DATA PROCESSOR

Ernst Moeckl, Stuttgart, Germany, assignor to Nixdorf Computer A.G., Paderborn, Pontanusstr., Germany

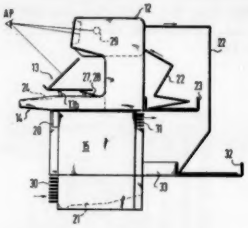
Filed Apr. 16, 1973, Ser. No. 351,293

Claims priority, application Germany, Apr. 19, 1972, 2219074

Int. Cl. A47b *77/02*

U.S. Cl. 312—281 **11 Claims**

1. A data processing machine comprising a data input area provided with means for feeding data into the machine, a support area provided with means for supporting a document or other member provided with information corresponding to said data, and a display area provided with means for visually



displaying said data, the data input area and the support area being arranged beneath the display area said support area being disposed between the data input area and the display area and rearward of said data input area.

3,847,462

SLIDING DRAWER FOR TABLES AND OFFICE DESKS

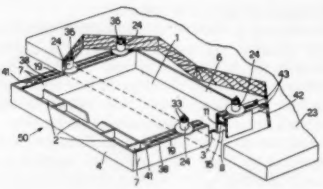
Renato Repetti, Forte Dei Marmi, Italy, assignor to Ing. C. Olivetti & C., S.p.A., Ivrea (Turin), Italy

Filed Feb. 5, 1973, Ser. No. 329,921

Claims priority, application Italy, Feb. 10, 1972, 52907/72

Int. Cl. A47b *88/04*

U.S. Cl. 312—330 **4 Claims**



1. A sliding drawer device for tables and office desk comprising a desk plate having a top surface and a bottom surface, said bottom surface housing two pairs of reciprocally parallel blind holes, a drawer assembly including a drawer having two side walls, two guiding section irons, means connecting said side walls to said two guiding sections irons below said two pairs of holes and parallel thereto, respectively, and two pairs of expansion bolts inserted in said blind holes, each of said irons including an upper wall defining a longitudinal slit, and said pair of expansion bolts including a first flange, a screw connected to said first flange, an expandable sleeve surrounding said screw, and a head joined to said screw for compressing said sleeve against said first flange for locking said expandable sleeve in said hole, said head comprising a second flange contacting said bottom surface of said desk plate, a pin projecting from said second flange, and slidably engaging the slit below the upper wall of said section irons and an enlarged portion for slidably guiding said upper wall between said second flange and said enlarged portion of said head to enable the sliding motion of said drawer with respect to said desk plate.

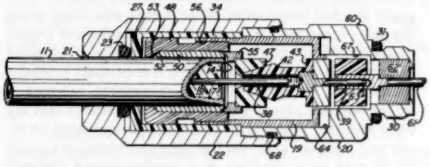
ERRATUM

For Class 333—147 see:
Patent No. 3,846,916

3,847,463
CABLE CONNECTOR APPARATUS

Robert D. Hayward, Phoenix, and James E. Chapman, Glendale, both of Ariz., assignors to Gilbert Engineering Company, Inc., Phoenix, Ariz.

Filed Apr. 11, 1973, Ser. No. 350,073
Int. Cl. H01r *17/04, 39/00*
U.S. Cl. 339—8 P **1 Claim**



1. An assembly for connecting a coaxial cable to a fixed device, said coaxial cable including

an elongate tubular outer conductor, and

an inner conductor wire coaxially located within said tubular outer conductor and spaced therefrom by a dielectric, said connector apparatus comprising a pair of connector assemblies, including:

a. a connector assembly to be fixedly secured to said coaxial cable including

i. a cylindrical outer conductor body having a plurality of contact members extending forwardly therefrom and a screw flight proximate the rear portion thereof,

ii. a collet within said outer conductor body and insulated therefrom to receive said inner conductor wire and having a probe extending forwardly therefrom,

iii. a collet closer associated with said collet,

iv. a compressible sleeve sized to receive said outer conductor, and

v. a nut having a bore to receive said cable therethrough and threadedly engageable with said outer conductor body,

said nut interacting with said sleeve and said collet closer as said nut is advanced along said screw flight to close said collet about said inner conductor wire and to clamp said sleeve about said outer conductor;

b. a connector assembly to be fixedly secured to said device including

i. an outer conductor body having a first axial bore therein sized to rotationally an frictionally receive said cylindrical outer conductor,

ii. a second axial bore within said outer conductor body sized to rotationally and frictionally receive said contact fingers, and

iii. a receptacle to rotationally and frictionally receive said probe,

said receptacle being electrically insulated from said outer conductor body; and

c. a union nut sized to rotatably encase one of said connector assemblies and engageable with the other of said connector assemblies to maintain said connector assemblies in mechanical and electrical connection.

3,847,464
UNIVERSAL ADAPTOR AND DISCONNECT FOR ACCESSORY IGNITION

Warren K. Pattee, 1200 E. 44th St., Kansas City, Mo. 64110

Filed Feb. 2, 1973, Ser. No. 329,079
Int. Cl. H01r *33/00, 13/50*
U.S. Cl. 339—31 R **8 Claims**

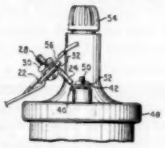
1. An adaptor for connecting accessory electrical apparatus with an ignition coil having a pair of spaced terminals of either the tab type or the post type which are normally engaged by compatible electrical connection means, said adaptor comprising:

a mounting member of insulating material;

a pair of tab-receiving connectors on said member extending in a first direction and spaced apart a distance equal to approximately the spacing between said terminals, said connectors being compatible with said terminals of the tab type;

a pair of connecting posts on said member and extending in a second direction; and

a pair of tab components having first means for mating with said connectors and second means for mating with said



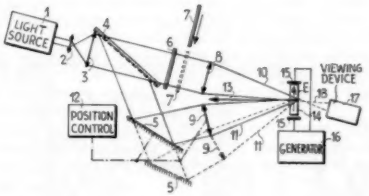
connecting posts, said second means being compatible with said terminals of the post type,

whereby when said adaptor is used with an ignition coil of the tab type said connectors engage the tab terminals of the ignition coil and said tab components adapt said compatible electrical connection means for connection to said connecting posts and when said adaptor is used with an ignition coil of the post type said compatible electrical connection means engage said connecting posts and said tab components adapt the post terminals of the ignition coil for connection to said connectors.

3,847,465
HOLOGRAM FORMATION WITHIN A POLYCRYSTALLINE PHOTO EXCITABLE ELECTRO-OPTIC PLATE

Francois Micheron; Jean Nicolas; Mieczyslax Hildebrandt; Guy Bismuth, and Antonio Hermasin, all of Paris, France, assignors to Thomson-CFS, Paris, France

Filed Nov. 14, 1972, Ser. No. 306,291
Claims priority, application France, Nov. 19, 1971, 71.41541
Int. Cl. G02b *27/00*
U.S. Cl. 350—3.5 **15 Claims**



1. Optical system with photo-induced holographic pattern comprising:

a plate consisting of photoexcitable electro-optic material having a polycrystalline structure, photo-inducing means positioned for irradiating said plate with a pattern of interference fringes, and bias means for generating within the volume of said plate a predetermined uniform state of electrical polarization; said material having a density differing from its theoretical density by less than five thousandths; said predetermined state of electrical polarization being formed during the writing-in and reading

out phases of said pattern of interference fringes; said pattern of interference fringes being constructed from the interaction of two coherent beams having a mean direction of incidence at an angle with the direction of said electrical polarization.

3,847,466

SCANNING ARRANGEMENTS

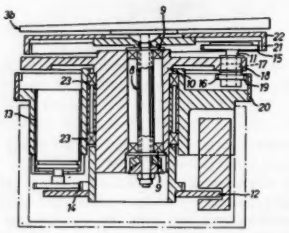
David Patrick Searle Forse, Middlesex, England, assignor to EMI Limited, Hayes, Middlesex, England

Filed Aug. 21, 1973, Ser. No. 390,257

Claims priority, application Great Britain, Sept. 2, 1972, 40815/72

Int. Cl. G02b *17/00*

U.S. Cl. 350—7 **6 Claims**



1. A scanning arrangement including reflector means having a planar reflecting surface arranged to direct received radiation toward detector means, means for rotating the surface in a first direction about an axis inclined to the normal to said surface, and means for causing said axis to precess about a second axis, inclined with respect to both said normal and said first mentioned axis, in a second direction, opposite to said first direction, the rotation and the precession being at substantially the same rate.

3,847,467

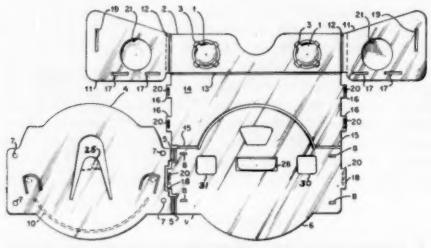
COLLAPSIBLE STEREOSCOPIC VIEWER

Alan Glueck Lewis, West Linn, Oreg., assignor to GAF Corporation, New York, N.Y.

Filed Nov. 1, 1972, Ser. No. 302,888

Int. Cl. G02b *27/22*

U.S. Cl. 350—140 **6 Claims**



1. An improved foldable stereoptic viewer adapted for convenient conversion between an in-use configuration suitable for use with rotatable viewing discs and a folded configuration adapted for compact storage, said viewer being a unitary construction of molded plastic including a plurality of interconnecting elements consisting essentially of:

a. a first body portion containing light transmitting viewing windows disposed in spaced apart relationship therein;

b. a second body portion hinged to and adapted for alignment with said first body portion by means of integrally molded hinge means, said first and second body portions being spaced apart from one another in said aligned position with sufficient clearance therebetween to permit the insertion of a viewing disc therebetween;

c. a top plate foldably connected by integrally molded hinge means to said first body portion and adapted for movement between a folded position adjacent and in the same plane as said body portions and an in-use position extending generally normal to said body portions;

d. a lens plate foldably connected to said top plate by integrally molded longitudinal hinge means extending along the side of said top plate opposite the side thereof hinged to said first body portion, said lens plate having a pair of openings therein at predetermined spaced apart positions therein and being adapted for movement between a folded position adjacent and in the same plane as said top plate and said first and second body portions and an in-use position normal to said top plate and essentially parallel to said body portions at a predetermined distance therefrom;

e. a pair of lenses positioned in said openings in the lens plate;

f. end flap means foldably connected by integrally molded hinge means to said lens plate at the end portions thereof, said end flap means being positioned against said lens plate when in the folded position and extending generally normal thereto and contacting said first body position when said viewer is in its in-use position; and

g. spindle means positioned between said first and second body portions and adapted to rotatably secure the viewing disc positioned between said first and second body portions,

whereby the unitary construction and integrally molded hinge means for folding said plurality of interconnecting elements facilitates the enhanced compactness and utility of said viewer and its adaptability for convenient portability and use.

3,847,468

AMMONIA-TREATED ELECTROCHROMIC (EC) ELECTRODES

Richard Howard Clasen, West Redding, Conn., and Robert Domenico Giglia, Rye, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed Dec. 7, 1972, Ser. No. 313,082

Int. Cl. G02f *1/36*

U.S. Cl. 350—160 R **7 Claims**

1. A variable light transmission device which comprises two layers, one an ammonia treated imaging persistent electrochromic material, and the other of a counterelectrode separated by an electrolyte layer disposed between a pair of conductive electrodes.

3,847,469

OBJECTIVE-PINHOLE UNIT FOR COHERENT LIGHT

Gregor Antes, Zurich, Switzerland, assignor to Jodon Engineering Associates AG, Wadenswill, Switzerland

Filed Aug. 29, 1973, Ser. No. 392,785

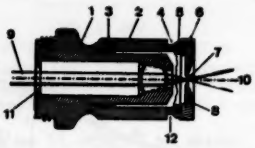
Claims priority, application Switzerland, Aug. 30, 1972, 12781/72

Int. Cl. G02b *7/02*

U.S. Cl. 350—247 **13 Claims**

1. A lens-pinhole unit for coherent light comprising an objective lens, a support having one end secured to said objective lens, a carrier plate, a diaphragm with a pinhole aperture

supported by said plate and a connection between said carrier plate and said support in the form of a hardened synthetic



resin layer which positions the pinhole in said diaphragm at the focus of the objective lens.

3,847,470

INDIRECT BINOCULAR OPHTHALMOSCOPE

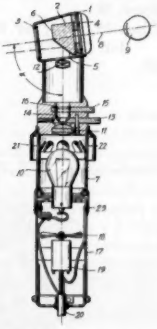
Roland Dederer, Sinsheim; Erwin Jahns, Heidelberg; Herbert Maier, St. Ilgen; Joachim Moser, Sinsheim, and Karl-Heinz Vierling, Bammental, all of Germany, assignors to Eltro GmbH & Co., Heidelberg, Germany

Filed Jan. 12, 1973, Ser. No. 322,973

Claims priority, application Germany, Jan. 19, 1972, 7201864; Jan. 19, 1972, 7201865

Int. Cl. A61b *3/12*; G02b *27/02*

U.S. Cl. 351—6 **8 Claims**



1. An indirect manually supported and operated binocular ophthalmoscope including first and second detachably connected modular portions, and a light source in said second modular portion for projecting an illuminating beam into said first modular portion; said first modular portion comprising:

1 a housing having first and second portions; an optical viewing system positioned substantially in the first portion of said housing, said optical system including magnifying lens means positioned between said housing and a patient undergoing examination, a prism including right angle surfaces interposed in the optical axis of said optical viewing system and so positioned within said housing as to receive light reflected from the eyes of a patient undergoing examination and passing said light to a pair of reflecting mirrors, a pair of reflecting mirrors positioned within said housing for receiving reflected light from said prism, a pair of mutually adjustable plate means extending perpendicular to the axis of said optical viewing system, and a pair of oculars mounted respectively one on each of said plate means and being associated in spatially adjustable relationship with said mirrors for receiving light reflected from said mirrors and serving to pass said light into the eyes of an observer; an illuminating system being positioned in the second portion of said housing, said illuminating system including lens and shutter means for directing the illuminating beam from said light source through said second housing portion onto a reflecting surface of said prism, said prism being adapted to reflect said illuminating beam into the eye of a patient; and means on one end of said second housing portion remote from said first housing portion forming a connection to said second modular portion;

2 and said second modular portion comprising an illuminating arrangement including a generally tubular handgrip-forming housing; means on said housing cooperatively engaging said connecting means for detachably fastening said second modular portion to said first modular portion, said housing having a longitudinal axis extending at an acute angle to said optical viewing system; an apertured end closure plate being mounted on the end of said tubular housing remote from the end fastened to said first modular portion; said light source being mounted within said housing; a cooling air circulating means in said housing; and motor drive means for actuating said air circulating means positioned in said housing for drawing a flow of cooling air into said housing through the apertured casing, axially conveying said airflow along said housing past said light source, air circulating means and motor drive means, and venting the heated air from said housing through the apertures in the housing and closure plate.

3,847,471

ROTATING PRISM FOR PROJECTORS

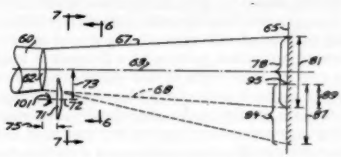
Franz Friedrich Lindner, Suite 1007-777 Cardero St., Vancouver, British Columbia, Canada

Filed Mar. 13, 1973, Ser. No. 340,886

Claims priority, application Canada, Mar. 30, 1972, 138569

Int. Cl. G03b *21/28*

U.S. Cl. 353—81 **10 Claims**



1. An optical apparatus for projecting from a stationary transparency multiple images onto a screen, the images being characterized by a stationary and complete primary image and a plurality of moving and incomplete secondary images displaced from the primary image and occupying a portion of the screen on one side of a cropping line extending across the screen, the secondary images describing a discontinuous orbit about the primary image, the primary image being brighter than the second images, the apparatus including:

a. a projector being adapted to project an image from the transparency onto the screen, the projector having a projector lens, the projector lens having a focal length and an optical axis,

b. a prism lens having: a first flat face, a convex faceted face, and a central optical axis normal to the first face, the faceted face having a plurality of peripheral facets inclined equally to the first flat face; the prism lens being disposed so that the central optical axis thereof is spaced laterally from the optical axis of the projector lens so that a portion of the prism lens having the peripheral facets overlaps a portion of the projector lens so that a portion of light from the projector lens is intercepted by the prism lens to disperse rays to produce the secondary images, the cropping line defining inner edges of the secondary images and being normal to a line on the screen joining axes of the projector and prism lenses produced to meet the

screen; the prism lens being interposed between the screen and projector lens and spaced at a distance from the projector lens less than the focal length of the projector lens; the prism lens being mounted for rotation about the central optical axis thereofk

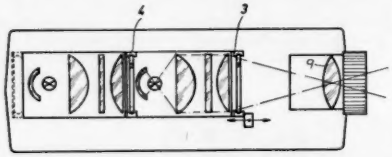
c. rotating means cooperating with the prism lens adapted to rotate the prism lens about the central optical axis thereof, so as to cause the secondary images to describe the discontinuous orbit about the primary image.

3,847,472

DUAL PHOTOGRAPHIC SLIDE PROJECTOR

Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Claims priority, application Germany, Dec. 6, 1972, 2259651
Filed Nov. 30, 1973, Ser. No. 420,717
Int. Cl. G03b *21/26*
U.S. Cl. 353—94 **16 Claims**



1. A photographic slide projector comprising two projection lens systems situated side by side and having optical axes which are substantially parallel to each other, two slide carriers, one located in the optical axis of each of said projection lens systems, each of said carriers being mounted for movement axially along its respective optical axis between a forward projection position and a rear loading position, and illuminating means for illuminating slides in said carriers when said carriers are in their forward projection positions, the rear loading position of each carrier being spaced rearwardly from its forward projection position by a distance at least as great as the over-all axial length of said illuminating means, so that when one carrier is in its rear position and the other carrier is in its forward position with a slide therein illuminated by said illuminating means, slides may be removed from and inserted in the carrier in the rear position in a direction transversely across the axis of the other carrier in its forward position without interfering with illumination of a slide in the carrier in the forward position.

3,847,473

SLIDE PROJECTOR WITH VARIABLE TIMING MEANS FOR SLIDE CHANGE

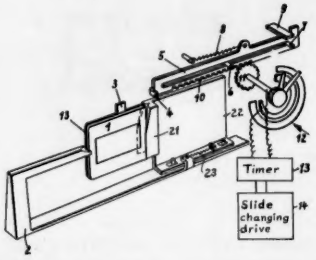
Reinhard Sobotta, Mascherode, Germany, assignor to Rollei-Werke Franke & Heidecke, Braunschweig, Germany

Filed Aug. 1, 1972, Ser. No. 276,962
Claims priority, application Germany, Aug. 6, 1971, 2139406
Int. Cl. G03b *23/02*
U.S. Cl. 353—114 **4 Claims**

1. The combination with a picture slide projector having means for automatically changing slides, of a picture slide assembly having means cooperating with said projector to determine the time interval that the slide assembly remains in projection position in the projector;

said projector including a slide changing drive, a timer for controlling the length of the time interval during which said drive leaves each slide in projection position before changing to the next slide, and a movable feeler member effective upon movement to adjust said timer to a different time interval;

said picture slide assembly including a conventional slide mount in which a picture slide is held, and a switching element separate from and lying against one face of said slide mount, said switching element having on one edge a protuberance projecting outwardly beyond the corresponding edge of said mount, said element otherwise having substantially the same outline as said mount, said



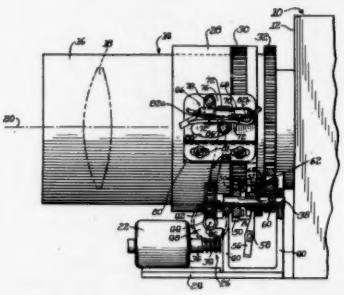
protuberance being in position to engage and move said feeler element of said projector while said picture slide assembly is being moved into projection position in said projector by operation of said means for changing slides.

3,847,474

ELECTRICAL CAMERA FOCUSING MECHANISM

Philip E. Uterhart, Park Ridge, Ill., assignor to Bell & Howell Company, Chicago, Ill.

Filed Jan. 19, 1973, Ser. No. 324,928
Int. Cl. G03b *13/20*
U.S. Cl. 354—168 **3 Claims**



1. In an optical instrument including a housing, focusable objective lens assembly having an optical axis and being supported by said housing, a motor for driving said lens assembly to focusing conditon, and normally incomplete circuit means including switch means connected to said motor and mounted for movement in response to the angular orientation of the optical instrument between a normally "open" position wherein the circuit means is incomplete and a "closed" position wherein said circuit means is complete for driving the lens assembly, the improvement in said switch means comprising: a mercury switch including an elongated enclosure mounted on said housing for movement relative thereto, liquid mercury received within said enclosure and contact means disposed within said enclosure for electrical contact by said mercury, wherein angular movement of said enclosure causes said mercury to move into and out of connecting engagement with said contact means defining said closed and open positions;

a focusing ring rotatably mounted on said housing generally concentric with the axis of the objective lens assembly;

cam means operatively associating said focusing ring and said enclosure for rotating the enclosure about an axis

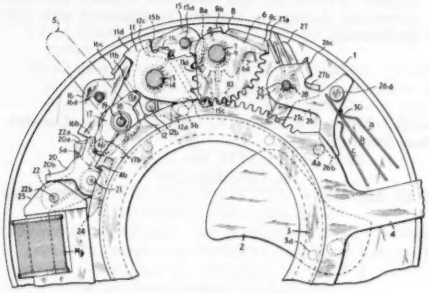
generally perpendicular to said optical axis in response to rotating said focusing ring, said cam means including a generally spiral-shaped slot in said focusing ring and a pin on said enclosure protruding into said slot.

3,847,475

ELECTRIC SHUTTER CONTROL

Kiyoshi Kitai, Tokyo; Yukio Nakamura, Yotsukaido; Hiroaki Ishida, Yoksukaido, and Shinji Nagaoka, Yotsukaiso, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1974, Ser. No. 434,667
Claims priority, application Japan, Jan. 19, 1973, 48-8931
Int. Cl. G03b *9/08*
U.S. Cl. 354—234 **1 Claim**



1. An electric shutter comprising, a plurality of shutter blades operable from a closed position to an open position and back to the closed position, an electromagnet controlling closing of the shutter blades at termination of an exposure time, an armature releasably held mechanically to the electromagnet and attracted by said electromagnet when energized, a holding lever releasably applying a biasing force to the armature biasing it against said electromagnet, means comprising a main driving cam for driving the shutter blades to an open and closed position, an intermediate lever having a pressure-applying spring for applying a pressure to bias the armature toward engaging the electromagnet, an armature lever having an armature-lever spring for biasing the armature away from said electromagnet, the pressure-applying spring having a greater force than the force of the armature-lever spring, said main driving cam having means for engaging the intermediate lever and rendering the pressure-applying spring ineffective to apply force to said armature only after said shutter blades have been opened, and means energizing the electromagnet after said shutter blades are opened.

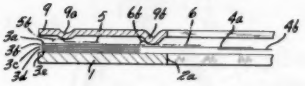
3,847,476

SHUTTER ASSEMBLY HAVING MEANS FOR PREVENTING REBOUNDING OF THE SHUTTER BLADES

Eiichi Onda, Misato; Mitsuo Koyama, and Tadashi Nakagawa, both of Chiba, all of Japan, assignors to Seiko Koki Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 23, 1973, Ser. No. 390,723
Claims priority, application Japan, Aug. 23, 1972, 47-97667
Int. Cl. G03b *9/20*
U.S. Cl. 354—252 **4 Claims**

1. A shutter assembly for a camera comprising: means defining a shutter aperture; a plurality of actuatable shutter blades actuatable in sequence from one state wherein they close said shutter aperture to a second state wherein they open said shutter aperture and to a third state wherein they again close said shutter aperture thereby defining an exposure; shutter actuating means for sequentially actuating said plurality of shutter blades from one state to said second state and then to said third state; preventing means momentarily engageable with said shutter actuating means during movement of said shutter blades from one of said states to another and coacting with said shutter actuating means for sufficiently attenuating the motion of said shutter blades to prevent rebounding thereof after reaching their intended state, said



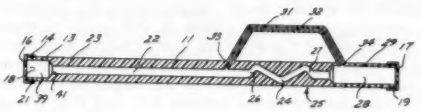
preventing means comprising at least one fixed projection disposed along the path of travel of said shutter actuating means, and a flexible portion comprising part of said shutter actuating means and slideable over said fixed projection and frictionally engageable therewith to effect resilient flexure of said resilient portion to a degree sufficient to press the shutter blades in a direction for causing said blades to contact each other laterally and to arrest the motion of said shutter blades.

3,847,477

LINEAR LOADING FILM PROCESSING DEVICE

Kenneth W. Haar, Omaha, Nebr., assignor to K. W. Haar & Associates Co., Omaha, Nebr.

Filed Apr. 23, 1973, Ser. No. 353,647
Int. Cl. G03d *17/00*
U.S. Cl. 354—312 **5 Claims**



1. A linear loading film processing device for developing an elongated strip of film, said film processing device comprising: an elongated developer tube having a bottom end and a top end, said tube having a chamber formed longitudinally therein which has a lower end exiting the bottom end of said tube and an upper end disposed intermediate said bottom and top ends, said tube having a first cap removably mounted on the top end of said tube and a second cap removably mounted on the bottom end of said tube;

a light trap having opposed ends disposed in said tube adjacent the upper end of said chamber and having a serpentine passage formed longitudinally therethrough from one end to the other end thereof with the one end of said passage fluidly communicating with the upper end of said chamber;

a charging passage formed in the top end of said tube and having a first end fluidly communicating with the other end of said serpentine passage and a second end exiting the top end of said tube;

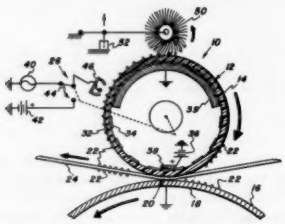
a film strip holder for holding film wherein the sides of the film do not contact the holder, said holder removably disposed in said chamber between said light trap and the bottom end of said tube, said holder being arcuate in cross-sectional view and having an inwardly facing flange secured to each edge thereof to form a channel with the internal width from edge to edge of the channel being slightly smaller than the transverse width of the film thus causing the film strip to have a transverse bow projecting toward the center of the film strip holder; and

an interior air vent formed in said tube around said light trap and fluidly communicating with the upper end of said chamber and the first end of said charging passage.

3,847,478
SEGMENTED BIAS ROLL

Eugene F. Young, Henrietta, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 17, 1973, Ser. No. 425,417
Int. Cl. G03g *15/16*
U.S. Cl. 355—3 **6 Claims**



1. In an electrostatographic duplex copying system, wherein one image is transferred from an imaging surface to a transfer member and then is subsequently retransferred to a final support surface at a transfer nip, and wherein another image is transferred from an imaging surface to said same final support surface by said same transfer member:

wherein said transfer member has an image receiving surface and a multiplicity of electrically discrete conductive strips underlying said image receiving surface;

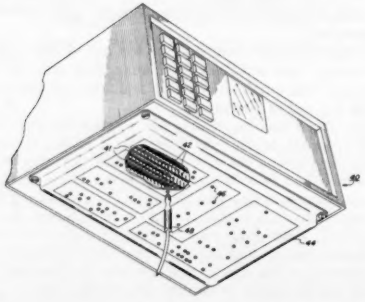
transfer bias means for applying an electrical transfer bias to selected ones of said conductive strips only adjacent said transfer nip for said image transfer to said final support surface; and

selectively operable image charging means for selectively applying an electrical charge to said image receiving surface of said transfer member, at a charging area of said surface substantially spaced away from said transfer nip, independently of said transfer bias means; wherein said image charging means includes A.C. and D.C. corona charging means and switching means for switching between said A.C. and D.C. corona charging means in coordination with movement of said transfer member; where said D.C. corona charging means is for polarity reversal of said one image and said A.C. corona charging means is for charge neutralizing.

3,847,479
COVER FOR WIRE WRAPPED CARD CHASSIS

Gerald R. Helbig, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 5, 1972, Ser. No. 312,400
Int. Cl. G03g *15/00*
U.S. Cl. 355—14 **1 Claim**



1. An electrostatic reproduction machine for producing copies of an original having a moving photoreceptor and a plurality of processing devices arranged when activated for producing electrostatic latent images on the photoreceptor for developing the images and for transferring developed images to a moving support material;

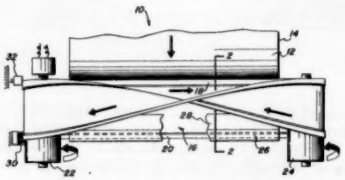
a control system for monitoring machine operations and energizing various machine elements in timed relation relative to the movement of the photoreceptor, said control system including a wire wrapped card chassis having a plurality of upstanding pins thereon,

a card chassis cover adapted to prevent access to a number of said pins, said cover having a plurality of numbered perforations therein in alignment with selected pins in said wire wrapped card chassis, said perforations being adapted to receive and guide test leads therethrough into engagement with the pins disposed behind said cover in alignment with said perforations for checking proper operation of said reproduction machine while preventing contact between the test leads and adjacent pins and preventing damage to the pins in alignment with said perforations.

3,847,480
CONTINUOUS BLADE CLEANER

Donald J. Fisher, Pittsford, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 12, 1973, Ser. No. 415,270
Int. Cl. G03g *15/00*
U.S. Cl. 355—15 **9 Claims**



1. In electrostatographic apparatus, the improvement in the cleaning system for cleaning imaging material from an imaging surface with a cleaning blade comprising:

an endless belt having two opposite edges,

said edges being adapted to clean said imaging surface;

support means for continuous motion of said belt including continuously moving a portion of one said edge of said belt transversely across said imaging surface in cleaning engagement with said imaging surface;

and a mobius twist in said belt spaced from said imaging surface for automatically reversing said one edge of said belt with the other said edge of said belt into cleaning engagement with said imaging surface.

3,847,481
PHOTOELASTIC PROCESSES FOR EXAMINING MECHANICAL STRESSES

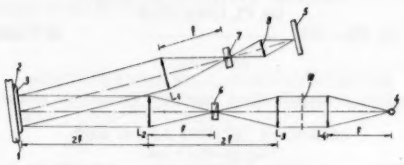
Dimitri Paraskevas, Creil; Alain A. L'Hermite; Georges F. Bernard, both of Senlis, and Jacques E. Guinet, Gouvieux, all of France, assignors to Centre Technique des Industries Mecaniques, Senlis, France

Filed Mar. 29, 1973, Ser. No. 345,896
Claims priority, application France, Apr. 27, 1972, 72.10617; May 24, 1972, 72.18422
Int. Cl. G01b *11/18*
U.S. Cl. 356—34 **18 Claims**

1. A device for use in visualization of mechanical stress lines by observation, under a polarized light source, of the double refraction images from a photoelastic material comprising:

means defining an optical path between a light source, a photoelastic material to be observed and a screen for receiving the images from said material,

a polarizer and an analyzer respectively arranged in the optical path between the source and the material, and the material and the screen,



a grid distant from the material and superimposed on said screen, and

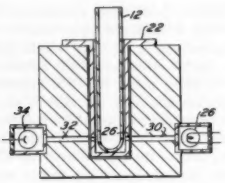
means for synchronized rotation of the polarizer, the analyzer and the grid relative to the optical path axis to produce a succession of said images at different angular orientations thereof.

3,847,482

APPARATUS FOR DETECTING A CHANGE IN TURBIDITY OF A SOLUTION

Michael Sokol, Abington, and Frederick M. Kent, Warrington, both of Pa., assignors to Bio/Data Corporation, Hatboro, Pa.

Filed July 10, 1972, Ser. No. 270,375
Int. Cl. G01n *33/16, 21/26*
U.S. Cl. 356—40 **13 Claims**



1. Apparatus for testing blood for the presence of Hemoglobin S, comprising:

means for receiving a substantially transparent container for holding a predetermined quantity of blood combined with a reagent which produces turbidity in the blood-reagent solution;

a light source;

transducer means, said transducer means producing an output signal responsive to light impingent thereon, said transparent container receiving means being mounted between said light source and said transducer means;

means for passing only variations in the output signal of said transducer means to produce an optical density variation signal;

means for integrating said optical density variation signal to produce a level signal;

threshold detector means for detecting when said level signal exceeds a predetermined value and producing an output signal;

timing means for generating a timing signal a predetermined time after initiation of the test;

gating means for gating the output signal of said threshold detector in response to said timing signal; and

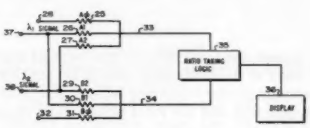
indicating means responsive to the output of said gating means for indicating whether or not said threshold detector means detected a level signal of said predetermined value corresponding to the absence or probable presence of Hemoglobin S in the blood being tested.

3,847,483

OPTICAL OXIMETER APPARATUS AND METHOD

Robert F. Shaw, 50 St. Germain, San Francisco, Calif.; David P. Sidlauskas, San Jose, and Donn D. Lobdell, Palo Alto, all of Calif., assignors to Robert F. Shaw, San Francisco, Calif., by said Sidlauskas and Lobdell

Division of Ser. No. 222,579, Feb. 2, 1972, abandoned. This application Sept. 24, 1973, Ser. No. 400,085
Int. Cl. G01n *33/16*
U.S. Cl. 356—41 **24 Claims**



1. Apparatus for determining the oxygen saturation of blood, comprising:

a plurality of electromagnetic radiation sources operable alternately and cyclically in selected timed sequence to produce electromagnetic radiation in a plurality of different wave bands;

means coupled to said sources for providing a first optical path between said sources and an optical outlet port remote from said sources which is disposed to communicate with blood;

detector means for producing electrical signals in response to electromagnetic radiation of each of said different wave bands applied thereto;

means coupled to said detector means for providing a second optical path between said detector means and an optical inlet port which is disposed to communicate with the blood at a location in close proximity to said optical outlet port;

signal means coupled to said detector means for producing an electrical signal for each of said radiation wave bands which is representative of the intensity of the radiation received by said detector means at the corresponding wave band;

source means of first and second reference signals;

first circuit means connected to receive said electrical signals and said first reference signal for producing a first electrical output as the combination of said electrical signals and first reference signal, each selectively weighted by a first set of coefficients;

second circuit means connected to receive said electrical signals and said second reference signal for producing a second electrical output as the combination of said electrical signals and said second reference signal, each selectively weighted by a second set of coefficients; and

means coupled to said first and second circuit means for producing a first output indicative of oxygen saturation of blood as the ratio of the first and second electrical outputs from said first and second circuit means.

3,847,484

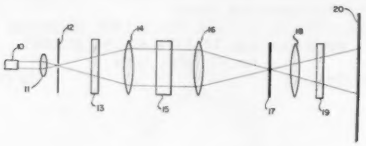
SCHLIEREN OPTICAL SYSTEM EMPLOYING A LASER LIGHT SOURCE

Lee Gropper, Los Altos Hills; Douglas H. Durland, and Maurice Galasso, both of Palo Alto, all of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Feb. 28, 1973, Ser. No. 336,557
Int. Cl. G01n *21/46*
U.S. Cl. 356—129 **1 Claim**

1. In a schlieren optical system comprising a source of light and in consecutive order from said source of light, a collimating lens, a condensing lens, a schlieren analyzer, a camera lens, a cylinder lens, and an image screen, the improvement

wherein the source of light is a source of laser light and the system includes a focusing lens and a second cylinder lens between the source of light and the collimating lens of the



schlieren system, the focal plane of the focusing lens being at the focal plane of the collimating lens of the schlieren system and the second cylinder lens being located at a point between the collimating lens and the focal plane of the focusing lens.

3,847,485

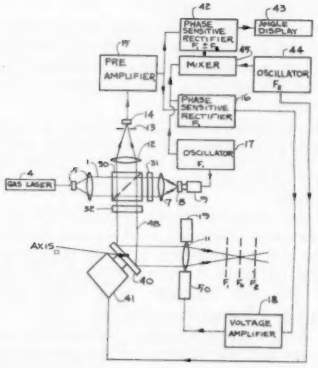
OPTICAL NONCONTACTING SURFACE SENSOR FOR MEASURING DISTANCE AND ANGLE OF A TEST SURFACE

Carl Z. Zanoni, Middletown, Conn., assignor to Zygo Corporation, Middlefield, Conn.

Continuation-in-part of Ser. No. 256,693, May 25, 1972, Pat. No. 3,768,910. This application Aug. 27, 1973, Ser. No. 391,783

Int. Cl. G01b *11/00*

U.S. Cl. 356—167 **6 Claims**



1. An optical noncontacting surface sensor for measuring the distance and angle of a reflecting test surface and a predetermined reference plane comprising (A) a source of radiant energy; (B) means for focusing at least a portion of said radiant energy on the reflecting surface; (C) means for modulating said focusing of said portion of said radiant energy at one desired frequency along its optical path; and (D) means for modulating said focusing of said portion of said radiant energy at a second desired frequency perpendicular to the optical path; (E) means for collecting radiant energy reflected from the test surface onto a single photodetector; (F) means for monitoring the first harmonic of said collected radiant energy at the frequency of modulation of means (C), to obtain information with regard to the direction and amplitude of the distance between the test surface and the reference plane; (G) and means for monitoring one or both of the side-band frequencies of said reflected energy to obtain primary information with respect to the normality, both in magnitude and direction, of the test surface relative to the reference plane.

3,847,486

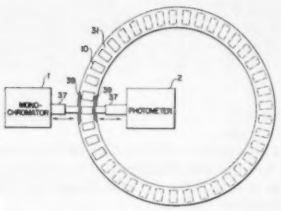
AUTOMATED SPECTROPHOTOMETER APPARATUS AND COMPUTER SYSTEM FOR SIMULATANEOUS MEASUREMENT OF A PLURALITY OF KINETIC REACTIONS

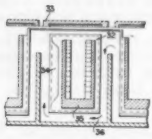
William C. McCabe, 2335 W. 31st St., So. No. E, Wichita, Kans. 67217

Filed June 7, 1972, Ser. No. 260,560

Int. Cl. G01n *21/22*

U.S. Cl. 356—205 **20 Claims**





1. An apparatus for making automated kinetic measurements comprising a standard light source, a standard light sensitive detector and a cuvette wheel assembly disposed between said light source and light sensitive detector, and mounted for rotation about an axle assembly, said cuvette wheel assembly containing a plurality of cuvettes containing the samples to be analyzed, means for rotating the axle assembly, thereby providing the sequential positioning of the samples in the light path of the light source, an idler gear assembly associated with the axle assembly and in synchronous phase with the cuvette wheel assembly, a "peak-picker" means associated with the detector indicating when a sample is in the proper position for recording transmittance readings received by the detector and an electronic computer system associated with the peak-picker means and the idler gear assembly for generating a final digital printout of multiple analytical reaction rate results.

3,847,487

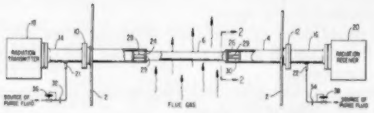
CONSTANT EFFECTIVE SLOT LENGTH LIGHT PIPE

Richard H. Boll, Alliance, Ohio, assignor to Bailey Meter Company, Wickliffe, Ohio

Filed Apr. 9, 1973, Ser. No. 348,876

Int. Cl. G01n *21/12*

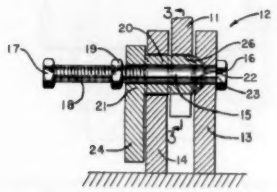
U.S. Cl. 356—207 **7 Claims**



1. In a light pipe for producing an in-situ, dimensionally stable, flowing sample of a fluid, the combination comprising: a support pipe having an elongated slot through which the

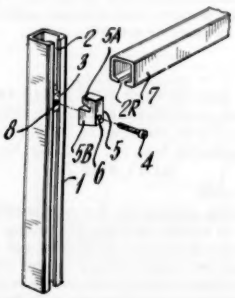
fluid sample flows, means for admitting purge fluid into said support pipe between each end of said slot and the adjacent outer end of said support pipe, and a disc closing said support pipe at each end of said slot provided with an orifice tube having a length at least twice the diameter of the orifice through which the purge fluid is discharged into the fluid flowing through said slot, thereby producing an orderly flow of purge fluid into said flowing fluid and a dimensionally stable sample of the flowing fluid.

3,847,488
MULTI-PURPOSE RELEASABLE CONNECTOR
Thomas M. Gossage, 70 Jallan Jarak, Singapore, Singapore (28)
Filed Oct. 24, 1972, Ser. No. 300,183
Int. Cl. B25g *3/38*
U.S. Cl. 403—79 **8 Claims**



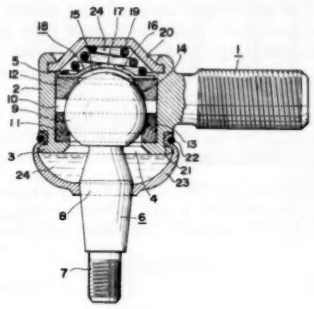
1. A releasable connector comprising
upstanding and laterally spaced support brackets,
a pin mounted between said support brackets,
a bushing mounted on said pin, and
locking means for normally retaining said bushing in a fixed axial position relative to said pin and for selectively releasing said bushing to permit it to be moved axially a substantial distance relative to said pin,
said locking means comprising a nut threadably mounted on said pin and positioned exteriorly of and closely adjacent to one of said brackets and wherein a first end of said bushing comprises an enlarged head positioned between said nut and said one bracket.

3,847,489
NOVEL FASTENER DEVICE
Robert S. Van Riper, 86 Heights Rd., Ridgewood, N.J. 07050
Filed Aug. 13, 1973, Ser. No. 387,692
Int. Cl. A47f *5/10*; **E04h** *17/16*
U.S. Cl. 403—110 **3 Claims**



1. A locking device for clamping a rail member to a support member comprising an anchor block and a lock block, said anchor block being adapted to be inserted into a hollow slotted support member and including means on said anchor block for receiving said lock block through said slot, said lock block having a portion thereof adapted to be insertable into a hollow slotted rail member and comprising two main portions, one of said portions being a neck portion having a locking surface and adapted to being disposed within said rail member and the other portion being a lock portion having a locking surface and adapted to be disposed outside of said rail member, fastener means on said lock portion of said lock block communicating with said anchor block, said two locking surfaces being disposed from one another a distance which corresponds substantially to the thickness of the portion of said rail member being clamped to said support member.

3,847,490
BALL JOINT
Yasuo Uchida, Hamamatsu, Japan, assignor to Ishikawa Tekko Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 8, 1973, Ser. No. 339,373
Claims priority, application Japan, Apr. 28, 1972, 47-43100
Int. Cl. F16c *11/06*
U.S. Cl. 403—140 **5 Claims**



1. A ball joint including synthetic bearings means and including lubricant for prolonging the high temperature operating life of said bearing means, said joint comprising:
a housing;
a stud shaft having a ball formed at one end thereof, said ball being disposed within said housing;
bearing means for rotatably supporting said ball in said housing, said bearing means consisting of a high molecular weight plastic material having ester-type bonds therein; and
a lubricant sealed within said housing, said lubricant consisting of silicone oil and a chemically inert material, said lubricant for minimizing deterioration and prolonging the high temperature operating life, of said bearing means.

3,847,491
APPLIANCE FOR LINEAR BODIES
James C. Poffenberger, Cleveland Heights, Ohio, assignor to Preformed Line Products company, Cleveland, Ohio
Continuation-in-part of Ser. No. 190,351, Oct. 18, 1971, abandoned. This application Jan. 12, 1973, Ser. No. 323,306
Int. Cl. E16g *11/03*, *11/10*
U.S. Cl. 403—209 **13 Claims**

1. A helically preformed appliance comprising:
a first elongated leg portion helically preformed to a first predetermined pitch length;

a second elongated leg portion helically preformed to a second predetermined pitch length different from said first predetermined pitch length; and

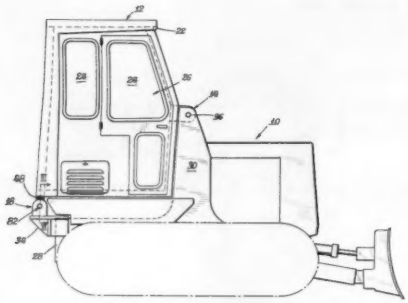
a return bent bight portion joining said first and second leg portions.

3,847,492

TRACTOR CAB MOUNTING APPARATUS

Robert B. Kennicutt, Morton, and William T. Mounts, Chillicothe, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 8, 1972, Ser. No. 278,731
Int. Cl. F16b 9/00
U.S. Cl. 403—224 7 Claims



1. Mounting means comprising:

a. a pair of spaced, generally parallel plates defining axially aligned apertures;

b. an annular lug member defining a lug aperture having (i) a first cylindrical portion of a first radius, (ii) a second cylindrical portion of a second radius greater than said first radius, and (iii) a radial portion interconnecting the first and second lug member aperture cylindrical portions;

c. an annular resilient means having (i) a first external cylindrical portion of a certain radius sized to fit within the lug member first cylindrical portion, (ii) a second external cylindrical portion of a second radius greater than said first resilient means radius to fit within the lug member second cylindrical portion, and (iii) a radial portion interconnecting the first and second resilient means cylindrical portions, one of the lug member aperture cylindrical portions being sized to continuously contact the external resilient means cylindrical portion fitted therein, while the other lug member aperture cylindrical portion is sized to be continuously spaced from the external resilient means cylindrical portion fitted therein, to form an annular gap therebetween, and (iv) defining a bore the axis of which is aligned with the axes of the plate apertures; and,

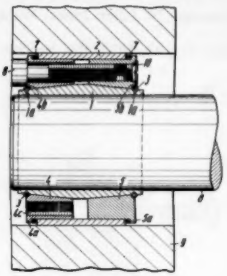
d. shaft means disposed through the plate apertures and resilient means bore and in contact with such resilient means bore, so that the lug member is movable in directions generally perpendicularly to the axis of the shaft means against the resiliency of one cylindrical portion only of the resilient means for a certain amount of travel, and against the resiliency of both cylindrical portions of the resilient means for additional travel.

3,847,493

DOUBLE CONICAL HUB-TO-SHAFT CONNECTION

Oskar E. Peter, Brackenheim, and Lothar Peter, Guglingen, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany, by said Lothar Peter

Filed July 24, 1973, Ser. No. 382,130
Claims priority, application Germany, May 28, 1973, 2327118
Int. Cl. F16d 1/06
U.S. Cl. 403—370 9 Claims



1. Double-conical hub-(9)to-shaft (8) connection comprising

an outer sleeve (2) having an outer surface bearing against the inner surface of the hub (9);

an inner sleeve (1) having an inner surface bearing against the outer surface of the shaft (8) the other surface of one of said sleeves being double-conical, with the thicker portion of the cone centrally located, and the other surface of the other sleeve being cylindrical;

a pair or ring-shaped spreader elements (4, 5) having one cylindrical surface fitting against said cylindrical surface in the other sleeve and one conical surface fitting against that conical surface of said one sleeve;

the cone angle of said conical surfaces being greater than the self-binding angle;

the outer end portions of said spread elements (4, 5) being formed with a radially projecting flange (4*a*, 5*a*) projecting towards one of said sleeves;

rings (7) of elastically compressible material being located between the projecting flange (4*a*, 5*a*) of the respective spread element and the respective end surfaces of the adjacent sleeve (2);

a circumferential groove (1*a*) formed in the second of said sleeves, and a compressible spring-ring (3) located in said groove and securing said elements and said sleeves in a normally inseparable assembly..

3,847,494

COUPLING MECHANISM FOR TUBULAR ELEMENTS

Ernest Franklin, 9950 Durant Dr., Beverly Hills, Calif. 90212

Division of Ser. No. 64,964, Aug. 19, 1970, Pat. No. 3,650,427.
This application Sept. 30, 1971, Ser. No. 185,094
Int. Cl. F16b 7/00
U.S. Cl. 403—345 4 Claims

1. A coupling mechanism for permanently coupling together a pair of tubular elements comprising:

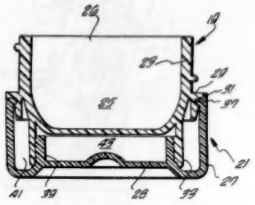
a first element having an annular side wall with an annular groove on the outside surface thereof and a second element, the second element also having an annular side wall fitting over the first element side wall, the second element side wall further having an open end surrounding the first element and a flexible continuous closed end;

projection means on the second element extending radially inward and beyond the inside surface of the second ele-

ment side wall surface to provide a snap-in engagement with the annular groove thereby providing a first securement point between the elements;

means for frictionally interengaging the first and second elements to provide a second securement point with at least two separate contact points between the elements comprising a first tubular splined extension member on the first element having an outside diameter at least slightly smaller than the inside diameter of the first element annular side wall and a second splined tubular extension member on the second element for frictional interengagement with the first tubular splined extension; and

means for increasing the frictional engagement between said splined tubular extension members upon the application of an external load including that portion of the continuous flexible closed end extending between said separate contact points that permits relative movement between the contact points when said external load tends to disengage said projecting means from the annular groove and tends to stress the second element comprising an annular truncated conical portion forming part of said closed end adjacent the second tubular extension member and engaging the end of said first tubular extension member when said projection means is in engagement with said annular groove whereby any relative movement between said contact points increases the frictional interengagement of the extension members beyond the physical strength of at least one element to thereby permanently bond the elements together.



3,847,495

SYMMETRICAL HUB-TO-SHAFT CONNECTION

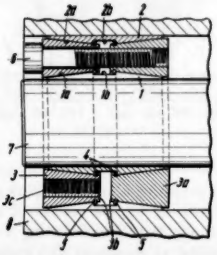
Oskar E. Peter, Guglingen, and Lothar Peter, Brackenheim, both of Germany, assignors to Oskar E. Peter, Brackenheim, Germany

Filed Feb. 8, 1973, Ser. No. 330,744

Claims priority, application Germany, Mar. 4, 1972, 2210491

Int. Cl. F16d *1/06*

U.S. Cl. 403—370 **10 Claims**



1. In a hub-to-shaft connection, to interconnect a shaft (**7**) to a hub (**8**) having

an axially slit inner sleeve (**1**) having a cylindrical surface adapted to bear with its inner surface against the shaft (**7**),

an axially slit outer sleeve (**2**) having an outer cylindrical surface adapted to bear with its outer surface against the surface of the bore of a hub (**8**);

the inner sleeve (**1**) having a central inner region and outer double-conical surfaces (**1***a*) extending from said central region and the outer sleeve having a central inner region and inner double-conical surfaces (**2***a*) extending from said region;

a pair of axially separated double-conical locking rings (**3**,**3***a*) having inner and outer conical surfaces fitting against one outer conical surface (**1***a*) of the inner ring (**1**) and the inner conical surface (**2***a*) of the outer ring (**2**), respectively, and interposed between the conical surfaces of said inner and outer rings (**1**,**2**),

and clamp means (**6**) engaging said locking rings to move the locking rings towards each other and thus effect sliding movement of the conical surfaces against each other and press the cylindrical surfaces against the shaft and hub, respectively, to concentrically lock the hub and the shaft together,

the inner regions of the conical surfaces of the inner and outer sleeves (**1**, **2**) and the inner facing ends of the locking rings being formed with circumferentially located, radially extending interengaging shoulders (**4**, **5**) and recess means (**1***b*, **2***b*).

3,847,496

TRAFFIC NETWORK FOR URBAN SETTLEMENT

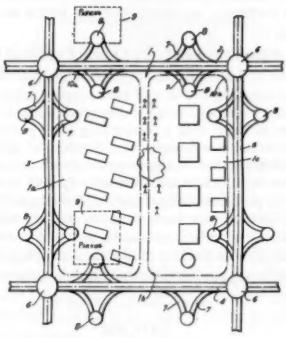
Jerzy G. Stankiewicz, Obkircherg. 38/1/4, 1190 Vienna, Austria

Continuation-in-part of Ser. No. 207,372, Dec. 13, 1971, abandoned. This application Aug. 4, 1972, Ser. No. 277,921

Claims priority, application Austria, Dec. 11, 1970, 11137/70

Int. Cl. E01c *1/00*

U.S. Cl. 404—1 **2 Claims**



1. A traffic network comprising a plurality of interchanges between a highway and a plurality of intersecting roadways, said highway peripherally encircling an urban settlement, with off-street parking facilities at a plurality of locations between said interchanges, and local transport means connecting said parking facilities with the interior of said settlement, said local transport means comprising:

at least one rail link with three parallel tracks including a central track and two lateral tracks;

a continuously running passenger carrier on said central track;

a pair of intermittently moving shuttle carriers on said lateral tracks; and

several stations each forming a loading platform alongside one of said lateral tracks and an unloading platform alongside the other of said lateral tracks;

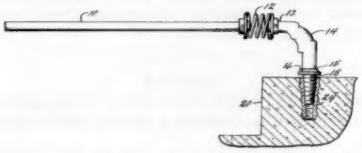
said loading platform giving access to one shuttle carrier upon a halting thereof at the station for boarding by waiting passengers, said unloading platform being accessible to arriving passengers on the other shuttle carrier upon a halting of the latter at the station, said shuttle carriers being accelerable to the speed of said continuously running carrier and being provided with docking means for temporarily locking onto said continuously running carrier to facilitate the transfer of passengers therebetween.

3,847,497

HIGHWAY SAFETY FIN

Perry Gene Guillory, Sr., RT. 2, Box 61-C, Orange, Tex. 77630

Filed Oct. 17, 1972, Ser. No. 298,393
Int. Cl. E01f *9/00*
U.S. Cl. 404—10 **8 Claims**



1. A highway safety fin for use along the edge portions of a roadway to provide an audible signal to warn a driver of a vehicle that he is approaching dangerously close to said edge portion, comprising:

a horizontally protruding rod;

a support member having a horizontally protruding portion and a vertically extending portion which are joined together;

a spring means having one end portion secured to an end of said rod and another end portion secured to said horizontally protruding portion of said support member;

a mounting member having a threaded tapered bottom end portion integral with a protruding head portion frangeably secured to a bottom end portion of said vertically extending portion of said support member; and

an anchor member made of relatively soft material compared to said mounting member, and disposable within a cavity formed in a hard roadway surface edge portion, and having a central tapered bore mated to said threaded tapered bottom portion of said mounting member so as to securably support said rod adjacent a roadway.

3,847,498

COMPACTING DEVICE

Gunnar Grane, Brunnsplan 1A, S-341 00 Ljungby, and Erik Kareby, Fiskebyvagen 10, S-122 47 Enskede, both of Sweden

Filed Jan. 12, 1973, Ser. No. 323,210
Claims priority, application Sweden, Jan. 13, 1972, 346/72
Int. Cl. E01c *19/34*
U.S. Cl. 404—133 **5 Claims**

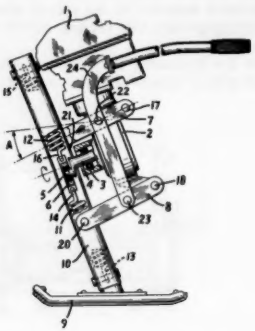
1. A compacting device comprising:

an engine unit having a power output shaft;

a compacting unit including a tamping plate and a structural member affixed to the plate and extending in a generally upward direction from the plate;

mounting means for mounting the engine unit on the structural member of the compacting unit for oscillatory movement of the compacting unit relative to the engine unit, the engine unit being positioned by the mounting means such that the output shaft thereof is located intermediate the ends of the structural member and is oriented with its axis generally transverse to the structural member; and

power transmission means for transmitting power from the engine unit to the compacting unit to establish oscillatory movement of the compacting unit relative to the engine



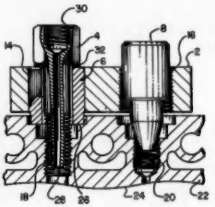
unit, the power transmission means including an eccentric pin connected to the power output shaft of the engine unit for rotation therewith and at least two springs, one end of each spring being pivotally connected directly to the eccentric pin and the other ends of the respective springs being connected under tension to points adjacent opposite ends of the structural member of the compacting unit.

3,847,499

TOOL AND METHOD FOR REAMING AND TAPPING A SPARK PLUG OPENING IN A ROTARY ENGINE HOUSING

Ernest Heyworth, Fullerton, and Phillip Schwartz, Huntington Beach, both of Calif., assignors to Tridair Industries, Redondo Beach, Calif.

Filed Sept. 4, 1973, Ser. No. 394,035
Int. Cl. B23b *35/00, 41/12, 45/14*
U.S. Cl. 408—1 **10 Claims**



1. A tool for preparing a damaged spark plug opening in a rotary engine housing for the receipt of a threaded insert comprising, an alignment block having a first and second opening for respective alignment with undamaged and damaged spark plug openings in communication with a common combustion chamber in said rotary engine, a securing bolt for clamping said alignment block to said housing, said bolt adapted to extend through said first opening of said alignment

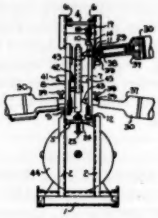
block and into threaded engagement with said undamaged spark plug opening, said bolt having air conduit means for communication with said combustion chamber, and said alignment block opening having means to receive seriatim a reamer for reaming out damaged threads of said damaged spark plug opening and a tap for tapping new threads in the damaged opening after being reamed.

3,847,500

WOOD CHAIR SEAT DRILLING MACHINE

Richard W. Deeter, 4912 W. Ridge Rd., Erie, Pa. 16506

Filed Nov. 7, 1973, Ser. No. 413,642
Int. Cl. B23b *39/16, 41/00*
U.S. Cl. 408—52 3 Claims



1. A wood chair seat drilling machine comprising
1. a frame having means for supporting a chair seat blank and for supporting first and second templets on opposite sides of the blank,
2. said first template having a first set of holders for drill means presented to one side of the blank, the position and angular relation of the holders being predetermined relative to said first templet and being unique to said one side of the blank,
3. said second template having a second set of holders for drill means presented to the opposite side of said blank, the position and angular relation of the second set of holders being predetermined relative to said second templet and being unique to said opposite side of the blank,
4. means for fixing in each holder a mounting means for a respective one of said drill means, each of said drill means being movable relative to its mounting means to drill a hole of controlled depth, the position and angular relation of the hole relative to the blank being determined by the holder in which the drill means is mounted,
5. means on one of the templates for clamping said blank against stops on the other template to hold the blank while holes are drilled in both sides of the blank.

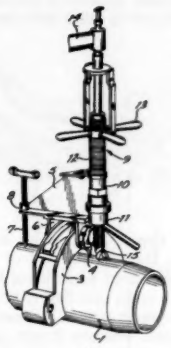
3,847,501

DRILL AND TAP ATTACHMENT FOR PIPE CLAMPS

John Trimble Doty, P.O. Box 8368, Long Beach, Calif. 90808

Filed May 29, 1973, Ser. No. 364,493
Int. Cl. B23b *47/00*
U.S. Cl. 408—108 4 Claims

1. A drill and tap attachment for a pipe clamp comprising a pair of arcuate shoes engagable with the pipe, means for pivotally attaching the shoes together, a mounting plate overlying the shoes and being supported thereon, a drill and tap means supported on the mounting plate on one side of said shoes, said drill and tap means including means for feeding and driving a drill and tapping tool supported therein relative to the pipe, a screw member threadingly supported on the mounting plate on the other side of the shoes, the axis of said screw member being substantially parallel to the axis of said drill and tap means and in a plane substantially common with the axes of said pivot means and said drill and tap means,



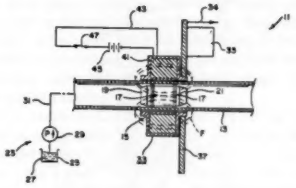
whereby said screw member can be adjusted to engage the pipe to level and stabilize the mounting plate relative to the pipe.

3,847,502

CONVEYING AND FORCE PRODUCING MEANS

Joe A. Isbell, 5299 Mesquite Rd., Memphis, Tenn. 38117

Continuation-in-part of Ser. No. 185,533, Oct. 1, 1971, abandoned. This application Dec. 2, 1972, Ser. No. 317,078
Int. Cl. F01d *1/00*
U.S. Cl. 415—92 17 Claims



1. A conveying and force-producing means comprising tube means, at least one inner member movably mounted in said tube means, fluid means for causing fluid to be supplied to said tube means on one end of said inner member to move said inner member, at least one outer member disposed adjacent the exterior of said tube means at a location along the length thereof which is in the proximity of said inner member, magnetic means for magnetically coupling said outer member to said inner member to cause said outer member to move along with said inner member.

3,847,503

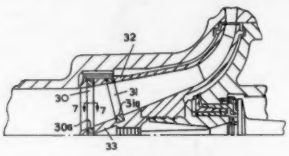
CENTRIFUGAL PUMPS FOR PUMPING LIQUIDS

Harry Simister Bottoms, Solihull, England, assignor to Lucas Aerospace Limited, Birmingham, England

Filed Dec. 29, 1972, Ser. No. 319,649
Claims priority, application Great Britain, Oct. 12, 1972, 47074/72; Jan. 12, 1972, 1403/72
Int. Cl. F04d *3/02, 7/00*
U.S. Cl. 415—143 5 Claims

1. A centrifugal pump for use in pumping liquids comprising a body defining a pump inlet chamber, a rotor mounted within the body and including a center body member tapering to-

wards said chamber, a shroud member surrounding the center body member and defining therewith a passage of annular section, the internal and external diameters of which increase in one axial direction, vanes interconnecting the shroud member and the center body member at one end of said passage, namely that end thereof at which said diameters are greater,

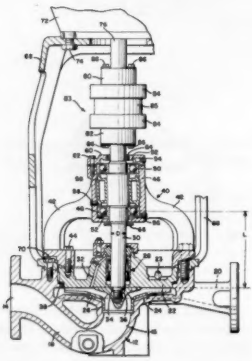


and a plurality of fingers mounted on at least one of said members, adjacent the opposite end of said passage, said fingers projecting across the passage and being arranged in a plurality of annular rows, said fingers being cylindrical and provided with converging slots of inclined to the axis of the center body member, whereby fingers generate axial flow through slots causing an emulsion of fuel and vapor to form.

3,847,504
IN-LINE PUMP

Arlin E. Martin, Tipp City, Ohio, assignor to The Duriron Company, Inc., Dayton, Ohio

Filed Dec. 1, 1972, Ser. No. 311,316
Int. Cl. F04d *29/40, 29/42, 29/62*
U.S. Cl. 415—201 **1 Claim**



1. An in-line pump comprising:

a. a main casing having an inlet and an outlet formed integrally therewith,

b. said inlet having a substantially horizontal upstream end and a substantially vertical downstream end joined by a smoothly curved elbow,

c. said outlet being substantially aligned to said upstream end of said inlet,

d. a cover plate mounted on an upper surface of said casing and defining therewith an impeller chamber,

e. an impeller received in said impeller chamber for rotation about a substantially vertical axis,

f. said cover plate having a diameter no smaller then the diameter of said impeller, thereby allowing said impeller to be removed from said impeller chamber when said cover plate is removed from said casing,

g. an impeller shaft fixed to and extending upwardly from said impeller,

h. a stuffing box integral with said cover plate and rotatably receiving said impeller shaft,

i. a bearing housing support including a plurality of upwardly and inwardly curved legs mounted on an upper surface of said cover plate and carrying a bearing housing at their upper ends,

j. a pair of vertically spaced bearings positioned in said bearing housing and rotatably receiving said impeller shaft,

k. the impeller shaft overhang and diameter thereof being such that the Index of Deflection of said pump is substantially less than 100,

l. a motor adapter mounted on said casing separately from said bearing housing support and extending upwardly about said bearing housing spaced outwardly of said bearing housing support,

m. a motor mounted on said adapter and having a downwardly extending motor shaft aligned with said impeller shaft,

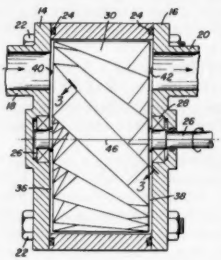
n. an elastomer coupling interconnecting adjacent ends of said aligned impeller and motor shafts, and

o. said adapter being of openwork construction and having an inner dimension greater than said diameter of said cover plate, providing access to and permitting removal of said coupling, bearings and bearing housing support, cover plate, impeller and impeller shaft while said motor and motor adapter remain fixed in place with respect to said main casing.

3,847,505
FLOW THROUGH IMPELLERS AND FLUID MACHINES EMPLOYING SAME

David W. Treese, 207 Holmer Rd., Greece, N.Y. 14626

Filed Feb. 20, 1973, Ser. No. 333,815
Int. Cl. F04d *3/00*
U.S. Cl. 415—213 **12 Claims**



1. A rotary impeller through which fluid flows, which comprises:

a shaft having an axis,

a generally cylindrical body mounted on said shaft and rotatable therewith,

a plurality of triangular slots in said body, each of said slots being spaced from said axis and extending in a substantially straight line between the opposite ends of said body, each of said slots having a longitudinal axis and

each of said slots being disposed with the projection of its longitudinal axis upon said shaft axis in the direction of said fluid flow defining an acute angle.

3,847,506
TURBOMACHINE ROTOR

Salvatore Straniti, Orange, Conn., assignor to Avco Corporation, Stratford, Conn.

Filed Nov. 29, 1973, Ser. No. 420,204
Int. Cl. F01d *5/08*
U.S. Cl. 416—244 **2 Claims**

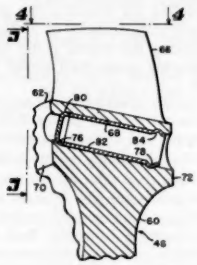
1. A one-piece cast turbomachine rotor comprising:

a central cylindrical hub;

a plurality of airfoil blades integral with and extending outward from the periphery of said hub at spaced circum-

ferential positions around the rim of said hub, said blades having an acute stagger angle relative to the axis of said hub;

a plurality of holes in said annular hub, said holes extending generally parallel to the stagger angle line of said blades, said holes each having an annular shoulder of reduced diameter formed adjacent one end thereof, and an annular recess of enlarged diameter adjacent the opposite end thereof;



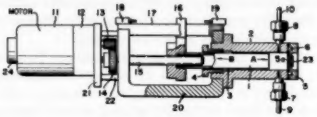
a like plurality of continuous slots, each of said slots extending radially outward from a respective hole and through the rim of said hub, said slots also extending in a line parallel to said stagger angle line; and

a generally cylindrical cup compressed into each of said holes, said cup being closed at one end and having a configuration complementary to said holes whereby said cups are retained in said holes between said shoulders and said recesses.

3,847,507
LIQUID SUPPLY SYSTEM BY PUMP

Kazutaka Sakiyama, and Tsutomu Hashimoto, both of Oaza-Tonda-shin-Nanyo, Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Yamaguchi-ken, Japan

Filed May 17, 1973, Ser. No. 361,139
Claims priority, application Japan, May 17, 1972, 47-48139
Int. Cl. F04b *49/06, 49/00*
U.S. Cl. 417—22 **8 Claims**



1. A system for supplying a liquid at constant pressure comprising:

a cylinder having an inlet and an outlet,

a piston reciprocably disposed within said cylinder for drawing liquid into and discharging liquid from said cylinder,

an electric motor,

means connecting said motor to said piston to enable said motor to reciprocate said piston,

means within said cylinder for detecting a pressure change in said cylinder,

means responsive to said pressure change detecting means for actuating said motor,

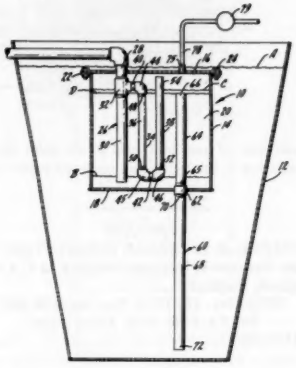
means for detecting the speed of said motor,

means responsive to said speed detection means for reducing the speed of said motor.

3,847,508
PNEUMATIC PUMP

John E. Mowen, Shawnee, Kans., assignor to Ecodyne Corporation, Chicago, Ill.

Filed Apr. 30, 1973, Ser. No. 355,616
Int. Cl. F04f *1/06;* **F04g** *21/00*
U.S. Cl. 417—118 **4 Claims**



1. A hydraulically controlled and pneumatically powered pumping unit for pumping liquids containing settleable solids from a container, comprising:

a. a vessel constructed in a substantially air tight manner for receiving liquid thereinto, said vessel being positioned within said container below the normal liquid level in said container;

b. a gas inlet pipe extending into said vessel through an upper portion thereof for supplying gas thereinto to pressurize said vessel, said gas inlet pipe being in communication with a continuous source of pressurized gas;

c. a discharge pipe extending into said vessel through an upper portion thereof;

d. a U-tube positioned within said vessel having a first end in fluid communication with said discharge pipe and a second end in fluid communication with an upper portion of said vessel, said U-tube serving to vent gas therethrough into said discharge pipe when not sealed by liquid confined therein and preventing the passage of gas therethrough when sealed by liquid confined therein; and

e. an inlet pipe extending through a bottom portion of said vessel, said inlet pipe having an upper end positioned below said first end of said U-tube and a lower end positioned a short distance above the bottom of said container so as to cause agitation on the bottom of the container adjacent said lower end of said inlet pipe when during normal operation of the pump unit liquid is forced out of said vessel and said inlet pipe into said container.

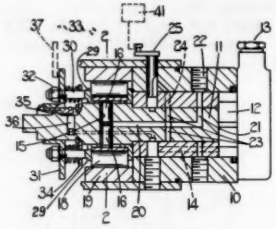
3,847,509
FUEL INJECTION PUMPS FOR I.C. ENGINES

Jean-Claude Bonin, Blois, France, assignor to Roto Diesel, Clichy (Haute-de-Sein), France

Filed Dec. 19, 1972, Ser. No. 316,485
Claims priority, application France, Dec. 22, 1971, 71.46180
Int. Cl. F04b *49/00*
U.S. Cl. 417—214 **27 Claims**

1. In a fuel injection pump for an internal combustion engine having a pair of reciprocable pumping plungers which are moved inwardly to affect a pumping stroke by means of rollers carried by shoes engaging the plungers, the rollers cooperating with cam means, and a leaf stop having end portions in the path of movement of the shoes, the improvement wherein the

contacting surfaces of said shoes and the end portions of said leaf stop are shaped so that relative movement of said shoes



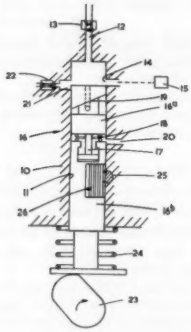
and end portions of said leaf stop in an axial direction will effect a variation in the permitted outward movement of said plungers.

3,847,510

FUEL PUMPS FOR INTERNAL COMBUSTION ENGINES

Ivor Fenne, Greenford, England, assignor to C.A.V. Limited, Birmingham, England

Filed Nov. 26, 1973, Ser. No. 418,848
Int. Cl. F04s *7/04;* **F02m** *39/00*
U.S. Cl. 417—293 **7 Claims**



1. A fuel injection pump for supplying fuel to internal combustion engines, the pump comprising a body part in which is defined a bore, an outlet from one end of the bore, a plunger reciprocably mounted in the bore, cam means for imparting movement to the plunger in a direction inwardly towards said one end of the bore, a filling port formed in the wall of the bore, said filling port being covered by an end of the plunger during inward movement thereof thereby to cause fuel to flow through said outlet, means for moving the plunger in an outward direction, said plunger being divided into two parts, a space between said plunger parts being filled with liquid, the quantity of liquid varying in accordance with the speed at which the pump is driven so that the effective length of the plunger varies, and thereby the instant at which said port is closed by the plunger also varies.

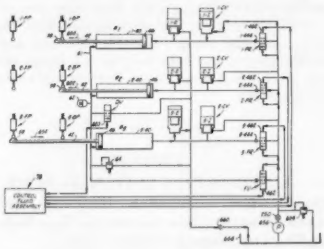
3,847,511

HYDRAULICALLY POWERED TRIPLEX PUMP AND CONTROL SYSTEM THEREFOR

Clinton W. Cole, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Oct. 16, 1973, Ser. No. 406,967
Int. Cl. F04b *17/00, 35/04*
U.S. Cl. 417—342 **3 Claims**

1. A fluid operated triplex pump comprising:
three piston and cylinder pumping assemblies, each operable in a suction, precompression and discharge cycle out of phase with the others;
each of said piston and cylinder assemblies including a power end and a fluid end, and a rod end;
power circuit means for cyclically operating each of said piston and cylinder pumping assemblies in said suction, precompression and discharge cycles;
control fluid circuit means for conditioning said power circuit means to cycle said piston and cylinder pumping assemblies;
said power circuit means comprising:
means for connecting the triplex pump to a power fluid reservoir for providing a source of power fluid;
means for connecting the triplex pump to a power fluid pump for delivering pressurized power fluid from said fluid reservoir;
flow regulating means operatively connecting the pressurized fluid delivered by said power fluid pump to said plurality of piston and cylinder assemblies and to said reservoir said flow regulating means including:
a plurality of power circuit valve means, each for selectively placing one of said piston and cylinder pumping assemblies in unrestricted fluid communication with said pressurized power fluid, in restricted fluid communication with a reduced flow of said pressurized power fluid, or in fluid communication with said fluid reservoir;
each of said power circuit valve means comprising:
a power fluid inlet valve body having a power fluid entry passage and a power fluid exit passage;



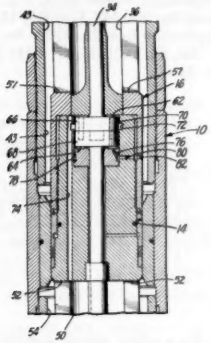
a power fluid exhaust valve body having a power fluid entry passage and a power fluid exit passage;
precompression valve means having a power fluid entry port, a power fluid output port having a restricted passage, a control fluid pilot port, and means normally blocking the entry port from the output port when control fluid pilot pressure exists in the pilot port;
the power fluid entry passage of said power fluid inlet valve body and the entry port of said precompression valve means being in continuous communication with pressurized power fluid delivered by said power fluid pump;
a common chamber in fluid communication with the power fluid exit passage of said power fluid inlet valve body, and in continuous fluid communication with the power end of a respective one of said piston and cylinder assemblies, with the output port of said precompression valve means, and with the power fluid inlet passage of said power fluid exhaust valve body;
the power fluid exit passage of said power fluid exhaust valve body being in continuous communication with said power fluid reservoir;
the pilot ports of each of said precompression valve means being in control fluid communication with said control circuit means;
power fluid inlet valve means carried by said power fluid inlet valve body for providing selective fluid communication between the power fluid entry passage and the power fluid exit passage of said power fluid inlet valve body; and
power fluid exhaust valve means carried by said power

fluid exhaust valve body for providing selective fluid communication between the power fluid entry passage and the power fluid exit passage of said power fluid exhaust valve body.

3,847,512
FREE TURBINE PUMP

Francis Barton Brown, La Crescenta, and John W. Erickson, Huntington Beach, both of Calif., assignors to Kobe Inc., Huntington Park, Calif.

Filed June 18, 1973, Ser. No. 370,944
Int. Cl. F04b *17/00*
U.S. Cl. 417—365 **8 Claims**



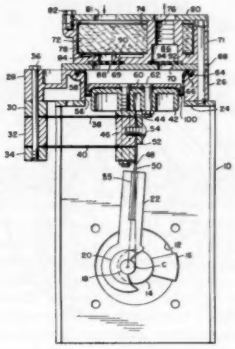
1. In a turbine pump for a well, the combination of:
a. an axial flow turbine and an axial flow pump interconnected in axially aligned, end-to-end relation with said turbine above said pump;
b. said turbine having a power fluid intake adjacent its lower end, and having a power fluid exhaust adjacent its upper end for spent power fluid;
c. said pump having a well fluid inlet adjacent its lower end, and having a production fluid outlet adjacent its upper end and adjacent said power fluid intake; and
d. means between said power fluid intake and said production fluid outlet for balancing axial thrust forces on said turbine and said pump.

3,847,513
AIR PUMP

Daniel S. Foster, Grosse Pointe Woods, Mich., assignor to W. D. Gale Inc., Detroit, Mich.

Substitute for Ser. No. 797,761, Feb. 10, 1969, abandoned.
This application Dec. 15, 1971, Ser. No. 132,554
Int. Cl. F04b *21/62*
U.S. Cl. 417—571 **7 Claims**

1. An air pump comprising a chamber, a piston movable in said chamber, inlet and outlet valved passages connecting to said chamber, flexible sealing means connecting the periphery of said piston to said chamber, guide means independent of said chamber for said piston, means for reciprocating said piston in the path determined by said guide means, in which said member is formed by a body having a cylindrical opening therethrough and an annular sealing surface at one end, said flexible sealing means is circular and has a peripheral portion in registration with said sealing surface, said chamber having an end wall in the form of a valve plate, said plate overlying said sealing surface and serving to clamp the peripheral portion of said sealing means against said surface, said body being reversible with respect to the remaining structure, the piston being movable with substantial clearance in the cylindrical

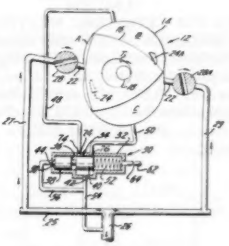


opening, and a circular cap selectively attachable to opposite sides of the piston to convert the pump from a pump adapted to deliver air under substantial pressure to a pump adapted to produce a relatively high vacuum.

3,847,514
SELF-STARTER SYSTEM FOR SINGLE ROTOR ROTARY EXPANSION ENGINE

Hsin S. Chen, Hasbrouck Heights, and Charles Jones, Hillsdale, both of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Filed Nov. 19, 1973, Ser. No. 416,929
Int. Cl. F01c *1/02*; **F04c** *1/02, 17/02*
U.S. Cl. 418—15 **12 Claims**

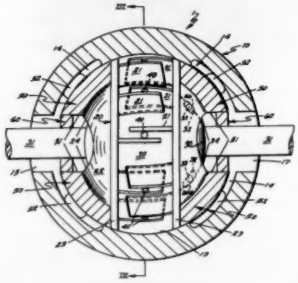


1. A self-starter system for an expansion rotary engine of the planetary rotor type having a rotor within a housing cavity and defining with the housing a plurality of working chambers and in which pressurized driving fluid from a source thereof is conducted through intake ports to said working chambers to rotatively drive the rotor, the self-starter system comprising:
a. a conduit means separate from said intake ports communicating with said source of pressurized fluid and at least one of said working chambers which is substantially fluid tight and against which the pressurized fluid exerts a torque force; and
b. valve means in said conduit means for controlling fluid flow therethrough and responsive to pressurized fluid from said source thereof to move from a closed position to an open position to permit flow of pressurized fluid therethrough and to said at least one working chamber.

3,847,515
VARIABLE DISPLACEMENT GEAR PUMP

Alan K. Caldwell, Big Rapids, Mich., assignor to Rewop Company, Grand Rapids, Mich.

Filed Mar. 29, 1973, Ser. No. 345,998
Int. Cl. F01c 21/16
U.S. Cl. 418—16 50 Claims

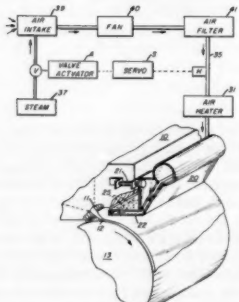


1. A variable displacement pump comprising: a housing having a pair of ports to provide an inlet and an outlet; a pair of generally oppositely disposed rotors rotatably mounted in said housing; each of said rotors including a plurality of vanes, the vanes on one rotor corresponding to those on the other rotor, said corresponding vanes extending towards one another and generally overlapping one another; drive means operatively connected to at least one of said rotors for effecting rotation thereof; means for variably adjusting the angular orientation of at least one of said rotors with respect to the other whereby the displacement of said pump can be varied; means for maintaining generally constant the circumferential distance encompassed by a given pair of said corresponding vanes on the circumference of a circle dividing equally the space between said two rotors whereby, regardless of said angular orientation of said rotors with respect to one another, said vanes do not bind against one another.

3,847,516
APPARATUS FOR EXTRUDING MELTED POLYMERIC THERMOPLASTIC MATERIALS

Edward P. Hoffman, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 140,087, May 4, 1971, Pat. No. 3,734,984.
This application Nov. 24, 1972, Ser. No. 309,330
Int. Cl. B29d 7/02
U.S. Cl. 425—72 4 Claims



1. An apparatus for preventing the occurrence of random die lines in an extruded thermoplastic product comprising in combination:

an extrusion die for a thermoplastic product;

means for directing gas heated to a desired temperature against the thermoplastic product as it leaves said die;

means for supplying said heated gas to said directing means;

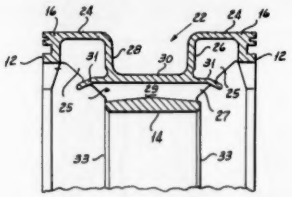
means in communication with said supplying means upstream of said directing means for increasing the humidity of said heated gas when it falls below a desired level:

means within said supplying means for sensing the humidity of said heated gas and cooperating with said humidity increasing means.

3,847,517
ROTARY PISTON FOR A ROTARY INTERNAL COMBUSTION ENGINE

Walter L. Hermes, Cedar Grove; Howard R. Corwin, North Caldwell; Murray Berkowitz, Woodcliff Lake, and Harold D. Lamping, Oakland, all of N.J., assignors to Curtiss-Wright Corporation, Wood-Ridge, N.J.

Continuation of Ser. No. 253,319, May 15, 1972, abandoned.
This application Dec. 26, 1973, Ser. No. 428,109
Int. Cl. F02b 55/02; F01c 21/06
U.S. Cl. 418—91 3 Claims



1. A rotor for a rotary piston, internal combustion engine comprising:

a. a body portion having a hub portion, opposite side faces and a plurality of contiguous flank surfaces spaced radially outward of the hub portion;

b. said hub portion having opposite end surfaces each of which lie in a plane axially and inwardly spaced from the plane of the associated side face;

c. a pocket in each of the flank surfaces;

d. each of said pockets being generally rectangular in shape and having opposite side walls and a bottom wall;

e. a plurality of ribs circumferentially spaced with respect to the hub portion and radially extending between and interconnecting the flank surfaces along the sides and bottom walls of the pockets and the hub portion;

f. said ribs defining with the hub portion and the flank surfaces a plurality of axially extending cooling fluid flow passageways adjacent the side and bottom walls of each of the pockets; and

g. the bottom wall of each pocket has an extension integrally formed with said bottom wall and projecting axially from one side thereof to a point beyond a radial plane containing the end surface of the hub portion adjacent said side of the bottom wall and which extension serves as a baffle for directing cooling fluid into said fluid passageways.

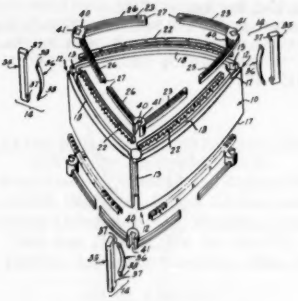
3,847,518
POLYIMIDE HIGH-TEMPERATURE RESISTANT PLASTIC SEALING ELEMENT

Herbert F. Prasse, Town and Country, and Harold E. McCormick, Ballwin, Mo., assignors to Ramsey Corporation, St. Louis, Mo.

Filed Dec. 18, 1972, Ser. No. 316,226
Int. Cl. F04c 27/00
U.S. Cl. 418—122 6 Claims

1. An apex seal for a rotary type internal combustion engine in which the apex seal effects a seal between an apex of a rotor

and a trochoidal inner surface of the rotor housing, said seal having an outer peripheral bearing face of a filler-



reinforced, end-capped polyimide resin for sliding contact with said trochoidal inner surface.

3,847,519

GEAR PUMP ARRANGEMENT

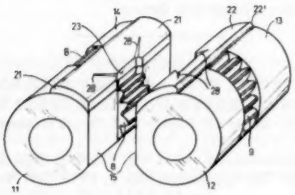
Wilhelm Dworak, Stuttgart, and Wolfgang Talmon, Otisheim, both of Germany, assignors to Robert Bosch GmbH, Stuttgart, Germany

Filed June 13, 1973, Ser. No. 369,767

Claims priority, application Germany, Aug. 12, 1972, 2239727

Int. Cl. F01c *19/02*

U.S. Cl. 418—126 **11 Claims**



1. Gear pump arrangement, comprising housing means having an inlet and an outlet for a liquid, and forming a cavity between said inlet and said outlet; two pairs of bearing bodies mounted in said cavity; rotary gear means including a pair of meshing gears between said bearing bodies, and two pairs of shaft portions rotatably supported by said bearing bodies, said gears having opposite inlet and outlet regions communicating with said inlet and outlet; said cavity having an endless inner surface formed with a pair of circumferential channels extending around said gears, respectively, and having first ends communicating with said inlet and second ends located near said outlet region; and two resilient metal strips axially extending across said gears and bearing bodies and having radially inner faces fitting on the outer surfaces of said bearing bodies and on the outer ends of the teeth of said gears, and radially outer faces forming two pressure chambers with said inner surface, communicating with said outlet so that said strips are pressed inward exclusively by high pressure liquid and cooperate with the ends of the teeth of said gears in said outlet region while closing said second ends of said channels whereby said inlet and said outlet are fluid-tightly separated by said strips.

3,847,520

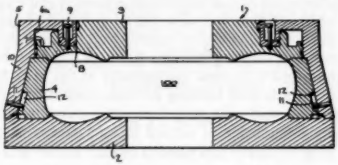
SEGMENTAL MOLD

Leon Paul Jean Plumhans, Grivegnee-Liege, Belgium, assignor to Uniroyal A.G., Aachen, Germany

Filed Feb. 26, 1973, Ser. No. 335,831

Int. Cl. B29h *5/02*

U.S. Cl. 425—47 **11 Claims**



1. A segmental mold comprising a pair of annular sidewall-shaping members spaced coaxially opposite one another, means for effecting movement of at least a first of said members axially relative to the second of said members, an annular array of tread-shaping segments concentrically interposed between said members, segment-shifting means movable axially relative to both of said members and operatively associated with said segments for effecting radial movement of the latter from an open annular array wherein said segments are spaced from one another to a closed annular array wherein said segments abut one another, said segment-shifting means including an annular portion defining a pressure chamber which is movable relative to said first of said members, and a fluid-actuated annular piston integral with said first of said members and axially displaceable in said chamber, said piston being commonly engageable annularly with said segments for opening the mold by transmitting an axial force downwardly through said segments and against said second of said members to, thereby, effect (a) an uplift of said segment-shifting means relative to said piston, (b) an axial separation of said segment-shifting means from said second of said members and (c) radial movement of said segments, while the latter are still in axial abutment with both of said members, from said closed annular array to said open annular array.

3,847,521

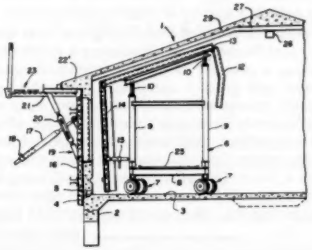
HINGED ROOF AND SIDEWALL FORMS FOR A MONOLITHIC STRUCTURE

Charles W. Stickler, Jr., Mohnton, Pa., assignor to Grey Tech Industries, Inc., Molinton, Pa.

Continuation-in-part of Ser. No. 200,060, Nov. 18, 1971, Pat. No. 3,742,102, which is a continuation-in-part of Ser. No. 123,539, March 12, 1971, abandoned. This application June 20, 1973, Ser. No. 371,825

Int. Cl. E04g *11/02*

U.S. Cl. 425—62 **8 Claims**



1. A form assembly for simultaneously casting a pair of roof and sidewall portions of a building to form a monolithic struc-

ture, comprising a pair of side by side wheeled, rectangular carriers, each carrier having two corner posts located at the corners farthest from the other carrier and two corner posts of greater height located at opposite corners of the carrier, jacking means connected to each of said corner posts, a pair of interior forms, each supported by one of said carriers and including a roof forming portion supported on the corner posts of the corresponding carrier in slanted position to enable lifting and lowering of said roof forming portion and a sidewall forming portion pivotally connected to one end of said roof forming portion suspended in substantially vertical position, each of said roof forming portions having a pivotal extension means whose end is located substantially at the apex formed by the side by side roof forming portions, means for bridging and supporting said ends of said pivotal extension means in confronting relationship, a second jacking means extending laterally from the lower side portion of each carrier and pivotally connected to the adjacent interior sidewall forming portion to enable pivotal movement of said sidewall forming portion away from a vertical position after casting of the sidewall, and a pair of vertical exterior forms spaced from said sidewall forming portions.

ERRATUM

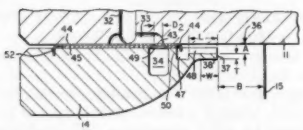
For Class 425—72 see:
Patent No. 3,847,576

3,847,522

SPINNERET BLANKETING APPARATUS

Robert Sherwood Heckrotte, and John Alexander Scott, both of Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 247,162, April 24, 1972, Pat. No. 3,761,559. This application May 8, 1973, Ser. No. 358,402
Int. Cl. D01d *3/00*
U.S. Cl. 425—72 **8 Claims**



1. An apparatus for melt-spinning filaments comprising: a spinneret assembly containing a spinneret plate having a lower face with orifices through which filaments are extruded, said plate being held in place by a retainer, said retainer having upper and lower surfaces and terminating in a lip at its closest approach to said filaments, said lip having a lower face, said retainer having a plurality of parallel grooves formed in its upper surface, said grooves comprising a manifold passage and a dissipator passage in communication with a gap opening toward said filaments therebeing a plurality of slots of substantially equal area between said manifold passage and said dissipator passage; means for supplying inert gas to said manifold passage; and a means for deflecting inert gas flowing into the dissipator passage, said equal area of said slots having an aggregate area less than the area of said manifold passage.

ERRATUM

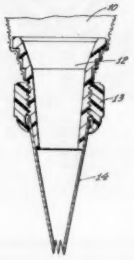
For Class 425—143 see:
Patent No. 3,847,503

3,847,523

UNIVERSAL COUPLER FOR CAKE ICING DECORATING TIPS

Douglas R. Parrish, Anaheim, and Richard A. Parrish, Costa Mesa, both of Calif., assignors to Parrish's Cake Decorating Supplies, Inc., Los Angeles, Calif.

Division of Ser. No. 198,340, Nov. 12, 1971, Pat. No. 3,801,247. This application Nov. 8, 1973, Ser. No. 414,180
Int. Cl. A23p *1/00*; **B29f** *3/04*
U.S. Cl. 425—191 **2 Claims**



1. A coupler assembly for selectively coupling icing decorating tubes of different sizes to a flexible icing cone having a hole in the lower end thereof, including:

a. a downwardly tapered tubular member having an externally threaded portion and insertable into said cone with said externally threaded portion protruding downwardly through said hole; and

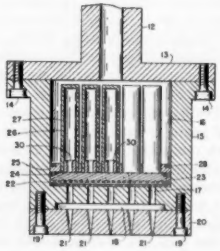
b. first and second nut members respectively having internally threaded portions of the same diameter interchangeably threadable on said externally threaded portion of said tubular member and respectively including first and second bottom edge means of different diameters for holding different sized decorating tubes against the lower end of said tubular member below said externally threaded portion thereof.

3,847,524

SPINNERETTE HEAD ASSEMBLY WITH POROUS METAL FILTER AND SHEAR ELEMENT

Lambert H. Mott, 15 Poplar Hill Dr., Farmington, Conn. 06032

Continuation-in-part of Ser. No. 183,450, Sept. 24, 1971, abandoned. This application Feb. 1, 1973, Ser. No. 328,884
Int. Cl. D01d *3/00*
U.S. Cl. 425—198 **12 Claims**



1. In a spinnerette head assembly for the extrusion of synthetic polymer fibers, said assembly having a filter cup containing a central cavity, and a spinnerette disk containing

extrusion apertures, said filter cup having passages leading to the extrusion apertures of said spinnerette disk; filter and shear elements comprising, in combination, an extended area porous metal filter extending into said central cavity having a filter area greater than the cross-sectional area of said cavity, and a porous metal shear element downstream from said filter filtering larger particle sizes than said filter, said shear element providing controlled pressure drop in flow therethrough at least equal to that resulting in flow through said extended area filter.

3,847,525

APPARATUS FOR THE INJECTION MOLDING OF SYNTHETIC-RESIN ARTICLES

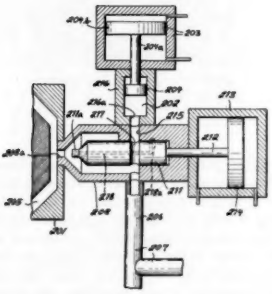
Friedrich Bernd Bielfeldt, Aidenried, and Richard Flohrs Richardsen, Seefeld, Oberalting, both of Germany, assignors to Krauss-Maffei Aktiengesellschaft, Munchen, Germany

Filed June 21, 1971, Ser. No. 154,792

Claims priority, application Germany, June 26, 1970, 2031657

Int. Cl. B29f 1/05

U.S. Cl. 425—245 R **2 Claims**



1. An apparatus for the injection molding of articles from a thermoplastic, comprising:

a. a mold assembly having at least one mold cavity;

b. mold-closure means connected with said mold assembly for opening and closing said mold assembly and for maintaining same closed with a mold-closing force;

c. injector means for charging said mold cavity with the thermoplastic;

d. means forming an accumulator communicating with said mold cavity;

e. a ram displaceable to feed an accumulated portion of thermoplastic into said mold cavity following contraction of the thermoplastic mass therein after injection of the latter, said mold assembly being formed with a plurality of such mold cavities and said injector means being so constructed and arranged to charge said mold cavities with said thermoplastic in succession, each of said mold cavities being provided with a respective one of such accumulators in communication therewith, and with a respective ram displaceable to feed the respective accumulation of thermoplastic from the respective accumulator into the respective mold;

f. flow-blocking means between said injector means and each of said mold cavities for terminating the flow of thermoplastic to the respective mold cavity and enabling the injector means to charge another mold cavity prior to operation of the ram of the former mold cavity, said flow-blocking means including a valve member provided with a recess affording communication between said injector means and said accumulator, each ram being operable independently of the respective valve member, said recess being a circumferential groove formed on said valve member, said valve member being further provided with a passage interconnecting said accumulator and the respective mold cavities in a closed position of said valve member.

3,847,526

MATERIAL MIXING MOULDING APPARATUS FOR USE WITH A MOULD TO SHAPE A PLASTICS MATERIAL

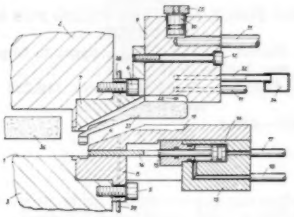
Bernd Fries, Volkach, Germany, assignor to Ankerwerk Nurnberg GmbH, Nurnberg, Germany

Filed Mar. 10, 1972, Ser. No. 233,474

Claims priority, application Germany, Mar. 16, 1971, 2112535

Int. Cl. B29f 1/03

U.S. Cl. 425—245 R **11 Claims**



1. A plastics material transfer apparatus for use with a mould comprised of first and second mould sections defining a mould cavity for shaping a plastics material composed of a plurality of liquid constituents, said apparatus comprising:

a body comprised of first and second body sections including means for mounting said first and second body sections on said first and second mould sections, respectively, of said mould whereby said respectively mounted sections separate and close during opening and closing of said mould, said body having formed therein a mixing chamber for mixing said liquid constituents therein and an injection duct in fluid communication with said mould cavity for passing said mixed constituents from said mixing chamber to said mould cavity, said first and second body sections of said body being formed with the line of separation thereof passing through said mixing chamber and said injection duct; and

a movable closure member for closing said injection duct.

ERRATUM

For Class 425—291 see:
Patent No. 3,847,535

3,847,527

PLODDER TRIMMER NOZZLE

Charles F. Fischer, Jersey City, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

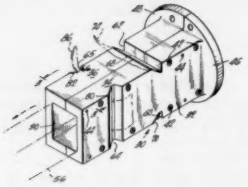
Filed Oct. 10, 1972, Ser. No. 296,252

Int. Cl. C11d 13/18, 13/28

U.S. Cl. 425—308 **4 Claims**

1. Plodder trimmer nozzle comprising an elongated hollow housing having an inlet end for receiving levigated soap, said inlet end including fastening means for attaching said nozzle to a soap plodder, an outlet end through which said levigated

mass of soap is extruded, cutting means medially mounted in said housing between said inlet and outlet ends, the interior



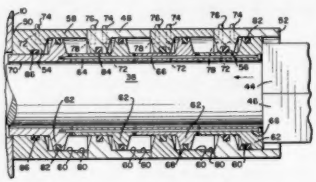
portion of said housing between said cutting means and said outlet end having lesser inner dimensions than the inner dimensions of said housing at said inlet end.

3,847,528

CLAMPING FORCE APPLYING MEANS FOR MOLDING MACHINES

Robert E. Farrell, Nashua, N.H., assignor to Improved Machinery Inc., Nashua, N.H.

Filed Nov. 29, 1972, Ser. No. 310,255
Int. Cl. B29f 1/00
U.S. Cl. 425—450.1 **2 Claims**



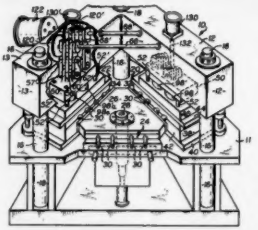
1. In a molding machine, a first platen, a second platen movable towards-and-away from said first platen, a plurality of tie rods associated with one of said platens and longitudinally projecting from said one platen towards the other thereof, gripping means operatively associated with said other platen for gripping said tie rods, said gripping means for each said tie rod comprising a plurality of breech blocks located on the opposite side of said other platen from said one platen and relatively movable for gripping a therebetween said tie rod, and individual clamping force applying means operatively associated with each said tie rod for applying clamping force to a mold between said platens through the tie rod and its respective said breech blocks, each said clamping force applying means comprising means defining a plurality of cylinders aligned with its respective tie rod and on such opposite side of said other platen intermediate said other platen and the respective said breech blocks for the tie rod, the end said cylinder most adjacent to such breech blocks having its end most adjacent to the latter open thereto, a piston in each of said cylinders, said pistons being interconnected to be fluid actuatable towards-and-away from such breech blocks for conjointly applying said clamping force, said pistons being annular and containing openings aligned with the tie rod and dimensioned to permit axial movement of the tie rod through said pistons, the piston in said end cylinder being adapted to apply clamping force through said cylinder open end to such breech blocks upon fluid driving of said piston towards the latter, means for supplying pressure fluid to said cylinders for driving said pistons towards-and-away from such breech blocks, and each said clamping force applying means further comprising by-pass means for by-passing pressure fluid around all of its said pistons, except its said piston in said end cylinder, after a predetermined movement of the pistons for application of clamping force, such by-pass means comprising internal grooves in the walls defining said cylinders constructed to communicate portions of said cylinders on opposite sides of their contained pistons, said grooves being located to prevent fluid flow therethrough during the normal application of clamping force by the pistons and said grooves being at the ends of said cylinders most adjacent to said breech blocks.

3,847,529

APPARATUS FOR CLAMPING MOLD OF INJECTION MOLDING MACHINE

John J. Farrell, Green Brook, and William Grazine, Piscataway, both of N.J., assignors to Farrell Patent Company, Dunellen, N.J.

Filed Dec. 7, 1972, Ser. No. 312,829
Int. Cl. B29f 1/00
U.S. Cl. 425—451.2 **23 Claims**



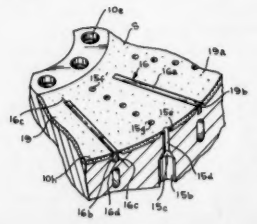
1. A molding machine including in combination a fixed frame, a mold including two parts, one of which is movable toward and from the other to close and open the mold, guide means along which the movable mold part travels, a linkage by which the movable mold part is connected with the fixed frame, the linkage being operable to put the movable mold part in substantially closed position when the linkage reaches its limit of movement in one direction, the linkage including two toggles that fold in opposite directions to balance side thrust of the toggles and to reduce wear of said guide means, each toggle being movable into a substantially straight position by the time the movable mold part reaches substantially closed position, and fluid-operated motor means in position to apply pressure to the mold to hold the mold closed after the linkage reaches its limit of movement whereby the final pressure for closing the mold is exerted after the linkage stops moving.

3,847,530

IMPROVED EXTRUSION DIE PLATE

William F. Hamilton, Houston, Tex., assignor to Mallay Corporation

Filed July 19, 1973, Ser. No. 380,726
Int. Cl. B29f 3/04
U.S. Cl. 425—461 **11 Claims**



1. An extrusion die plate for use in a pelletizing machine for extruding flowable material outwardly where such extruded material is sectioned by rotating knife blades, comprising:

a die plate body having sets of extrusion passageways angularly spaced about said die plate body for passing such flowable material outwardly into engagement with the rotating knife blades;

said die plate body including a die plate face on the discharge side thereof;

said extrusion passageways extending through said die plate body and terminating in nozzle portions protruding from said die plate face such that said die plate face is recessed around said nozzle portions;

a facing material of greater hardness than said die plate body being positioned on said die plate face; and

strips of wear-resistant material mounted with said die plate face between said sets of passageways for increasing the operating life of said extrusion die plate.

3,847,531

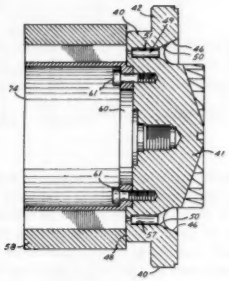
DIE ASSEMBLY FOR FOODSTUFF EXTRUDER

Kenneth H. McComb, 3285 S. Birch St., Denver, Colo. 80227

Filed Aug. 29, 1973, Ser. No. 392,562

Int. Cl. B29f *3/04*

U.S. Cl. 425—464 **5 Claims**



1. A die plate organization for use with an extrusion machine for liquifying and extruding foodstuffs, comprising, in combination:

a. a die plate mounted on an extrusion machine and having a circular array of extrusion orifices extending therethrough and opening into the outer face of said die plate, each outer face orifice opening being X-shaped in configuration;

b. a guide sleeve means secured to the outer face of said die plate, said guide sleeve defining a plurality of substantially square passages corresponding in number to said die plate orifice openings, said square passages each being axially aligned with a corresponding X-shaped die plate orifice, the angular relationship of each said square passage and corresponding orifice being such that the X-shaped die orifice corresponds to the diagonals of the square passage.

3,847,532

APPARATUS FOR FABRICATING BRUSHES HAVING MOLDED ENDS

Edward S. Bischoff, 515 Main St., Old Saybrook, Conn. 06475

Filed Mar. 22, 1972, Ser. No. 236,938

Int. Cl. B29d *31/00*

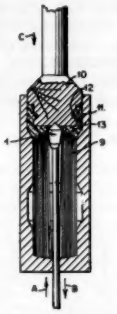
U.S. Cl. 425—500 **19 Claims**

1. Apparatus for fabricating brushes comprising:

a hollow mold defining a cavity therein, said cavity being adapted to receive a plurality of synthetic brush filaments through an open end thereof;

a movable plug member movably inserted substantially longitudinally centrally of said mold, and movable in the longitudinal direction of said filaments; and

means for moving said movable plug member from a first position relative to said cavity for receiving filaments in said mold cavity, to a second position interior of said mold cavity for engaging said filaments with an inner surface of said mold, said filaments received in said mold being of sufficient number and said mold and said plug member being so dimensioned as to tightly press said filaments between said inner surface of said mold and said



plug member which effectively separates said mold into first and second inner cavity portions which are isolated from each other and which substantially centrally separates said filaments during fabrication of said brush to form a space void of filaments substantially centrally of the resulting brush, said movable plug member by said tightly pressing said filaments between itself and said inner surface of said mold substantially preventing flow of molten filament material between adjacent pressed portions of said filaments and shielding portions of said filaments in said mold cavity from heat applied to the filament ends in an end portion of said mold cavity.

3,847,533

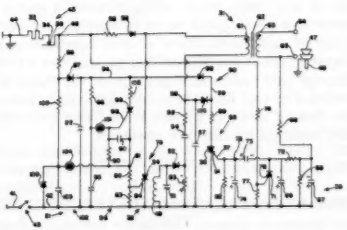
FLAME IGNITION AND SUPERVISION SYSTEM

William J. Riordan, Shrewsbury, Mass., assignor to Walter Kiddle & Company, Inc., Clifton, N.J.

Filed Mar. 12, 1973, Ser. No. 340,448

Int. Cl. F23n *5/12*

U.S. Cl. 431—78 **34 Claims**



1. Circuit apparatus for controlling a fuel burner and comprising:

a power source;

flame responsive means for detecting flame at the burner;

valve means for controlling the flow of fuel to the burner;

energy storage means for receiving and storing electric energy from said power source;

energy transfer means responsive to the detection of flame by said flame responsive means for transferring the energy stored in said energy storage means to said valve means for actuating said valve means to produce fuel flow to the burner; and

limit means for preventing sufficient energy from flowing from said power source directly to said valve means to provide actuation thereof at any time during normal operation of said apparatus.

3,847,534
COMBUSTION APPARATUS

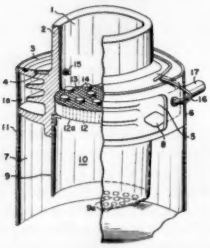
Tamotsu Nomaguchi, Amagasaki; Masatada Sakai, Wakayama, and Toshio Ito, Amagasaki, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sept. 22, 1972, Ser. No. 291,350

Claims priority, application Japan, Oct. 18, 1971, 46-82307; Nov. 27, 1971, 46-95675

Int. Cl. F23d *13/14*

U.S. Cl. 431—329 **4 Claims**



1. Combustion apparatus comprising:

a mixing chamber for mixing combustion air and vaporized fuel;

a combustion chamber for burning said mixture of combustion air and vaporized fuel;

a combustion plate, having a plurality of substantially evenly spaced flame holes, disposed between said mixing chamber and said combustion chamber;

a wire net supported on said combustion plate on the combustion chamber side thereof; and

a plurality of discrete flow obstacles having a lower substantially planar surface, being less in number than the number of said flame holes, and substantially evenly spaced apart in a given plane so as to be disposed above only some of said flame holes of said combustion plate to thereby deflect the flow of said gas mixture which passes through said combustion plate from the flame holes obstructed by said flow obstacles substantially laterally into the flow of said gas mixture from flame holes which are unobstructed by said flow obstacles.

3,847,535
METHOD AND APPARATUS FOR EXTRUDING CERAMIC TUBES

John B. Cahoon, Jr., Livermore; John B. Currey, Castro Valley, and Donald L. Emig, Livermore, all of Calif., assignors to The United States of America as represented by the United Atomic Energy Commission, Washington, D.C.

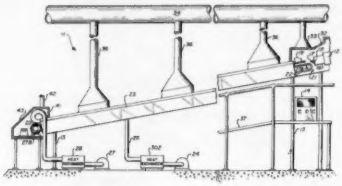
Filed July 6, 1960, Ser. No. 41,218

Int. Cl. A21c *11/10*

U.S. Cl. 425—291 **23 Claims**

1. In an apparatus for cutting the walls of extruded tubing material to a variable depth as it emerges from an extruder, the combination comprising an extruder diaphragm and die, a mandrel extending outwardly from said die, a cutter body defining an aperture mounted over said die and around said mandrel extending from said die, a plurality of cutter blades adjustably mounted in spaced relation around said mandrel onsaid body for simultaneous inward movement transverse to the axis of said mandrel and to a position in close tolerance therewith in a single transverse plane, mean adapted to move said blades inwardly, and means for returning said blades to their initial starting positions.

12. In a method for forming cuts on the exterior surfaces of an extruded ceramic tube, the steps comprising extruding a ceramic tube from an extruder assembly including an extruder diaphragm, die, and extruder mandrel extending exteriorly from said die, rapidly moving a plurality of blades inwardly in simultaneous movement at given intervals in a plane transverse to the direction of extrusion to an adjustable position in close tolerance with the extending end of said mandrel, said blades being initially mounted in spaced relation radially around said extrusion mandrel, said blades being adapted to intercept the surface of said ceramic tube substantially in a



single plane transverse to the direction of extrusion, whereby a score completely circumscribing said tube in a single plane is formed, and returning said blades at the conclusion of the inward stroke to its initial position after a swell time coordinated with said extrusion speed, said entire movement and return being adjusted to a period of time rapid enough to form a substantially continuous cut without a notching effect.

16. In the extrusion of moist elongated ceramic members and the subsequent substantial drying of same to rigid brittleness, an improved method for severing the elongated ceramic members into exact lengths and exact dimenssional tolerances comprising the steps of forming the moi st extrudable ceramic mix rigid enough to hold its shape when extruded yet plastic enough to flow slightly into depressions when extruded, extruding moist, elongated ceramic member from sai material, circumferentially scoring the surface of the moist extruded member at at least on e station therealong at which severance is desired. effecting said substantial drying of the extruded member, and applying a bending stress upon the dried member at said scored station thereby breaking the member proximate the scored station into separate lengths.

3,847,536
RADIANT BURNER OPERATING AT HIGH TEMPERATURE

Louis Lepage, Villiers-Le-Bel, France, assignor to Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole, Paris, France

Filed May 3, 1973, Ser. No. 356,903

Claims priority, application France, May 8, 1972, 72.16388

Int. Cl. F23d *13/14*

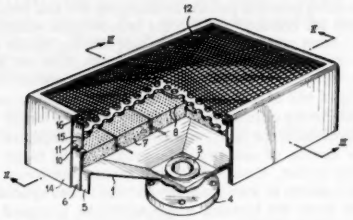
U.S. Cl. 431—329 **8 Claims**

1. A radiant burner for a combustible gaseous mixture comprising:

a box having an inlet for said gaseous mixture and constituting a mixing chamber;

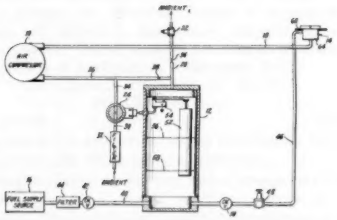
an emission plate opposite to said inlet and delimiting said mixing chamber, said emission plate being constituted by ceramic solid plates drilled of passages having a diameter

of between 0.40 to 0.70 mm., said passage being adapted to permit flowing of the gaseous mixture therethrough;
an auxiliary emission means made of a refractory metal drilled with holes of a larger diameter than the passages



in said emission plate, said auxiliary emission means surmounting said emission plate and being spaced from the latter by a peripheral frame supported by said box;
and an anti-convection screen spaced from said auxiliary emission means by said peripheral frame.

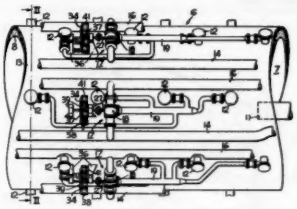
3,847,537
AIR-ATOMIZING FUEL BURNER
Wallace W. Velie, 616 W. 20th St., Upland, Calif. 91786
Filed Aug. 22, 1972, Ser. No. 282,694
Int. Cl. F23d *11/10*
U.S. Cl. 431—347 **21 Claims**



1. An air-atomizing fuel burner system comprising air-atomizing nozzle means for using air under pressure to atomize liquid fuel, air compressor means, means for delivering air under pressure from said air compressor means to said air-atomizing nozzle means, fuel reservoir means for storing liquid fuel, means for supplying liquid fuel to said fuel reservoir means from a remote fuel supply source, means for delivering liquid fuel from said fuel reservoir means to said air-atomizing nozzle means, means for delivering a portion of said air under pressure from said air compressor means to said fuel reservoir means, and means for connecting the vacuum side of said air compressor means to ambient during the burning cycle of said air-atomizing nozzle means and to said fuel reservoir during the reservoir refilling cycle.

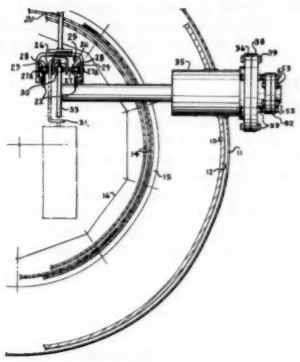
3,847,538
REDUCTION KILN HAVING DISTRIBUTION SYSTEM
Eugene F. Rossi, Wauwatosa, Wis., assignor to Allis-Chalmers Corporation, Milwaukee, Wis.
Division of Ser. No. 302,606, Oct. 31, 1972, Pat. No. 3,794,483. This application Oct. 1, 1973, Ser. No. 402,111
Int. Cl. F27b *7/06, 7/36*
U.S. Cl. 432—113 **4 Claims**

1. An ore reducing kiln comprising; an elongated rotary cylindrical chamber having a charge of ore to be reduced contained therein; fluid distribution means; a first fluid passage connected in fluid communication to said fluid distribution means; a second fluid passage connected in fluid communication to said fluid distribution means; a nozzle supported by said kiln for rotation with said cylindrical chamber, said nozzle being in fluid communication with said elongated cylindrical



chamber and with said fluid distribution means; and control means associated with said fluid distribution means, one of said means supported by said cylindrical chamber for rotation therewith, said control means adapted automatically upon rotation of said cylindrical chamber to operate said fluid distribution means to alternately connect and disconnect said first and second fluid passage means to said nozzle.

3,847,539
DRIVING MECHANISM FOR VACUUM ELECTRIC FURNACES
Benjamin A. Kreider, Richboro, and William J. Matalsky, Warminster, both of Pa., assignors to Abar Corporation, Feasterville, Pa.
Filed Dec. 3, 1973, Ser. No. 420,796
Int. Cl. F27b *9/14, 11/08*
U.S. Cl. 432—121 **14 Claims**



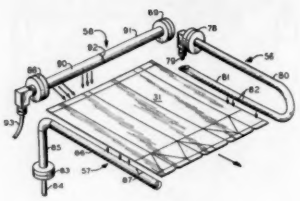
1. Driving mechanism for use with a vessel having the interior and exterior subject to temperature and pressure differentials comprising
a fixedly mounted housing facing the interior of the vessel, a shaft journaled within said housing in spaced relation thereto for rotation with respect to said housing, and
liquid sealing means interposed between said shaft and said housing for preventing fluid leakage between the interior and the exterior of the vessel and comprising
sealing members spaced along said shaft in sealing relation thereto, and
a liquid supply connection communicating with the space between said shaft and said housing for supplying lubricating and sealing liquid between said sealing members.

3,847,540

BLANK HEATING SYSTEM FOR CARTON FORMING MACHINE

Silvio T. Farfaglia, and Ronald E. Bock, both of Fulton, N.Y., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sept. 7, 1973, Ser. No. 395,035
Int. Cl. F27b *17/00*
U.S. Cl. 432—230 10 Claims



1. In a machine for forming a tubular carton from a generally rectangular flat sidewall blank having thermoplastic coating on the upper and lower surfaces thereof and having first and second side margins and top and bottom margins, wherein the sidewall blanks are individually removed from a sidewall blank magazine and conveyed through a heating station to a forming mandrel, the heated sidewall blank is wrapped around the forming mandrel and the overlapping first and second side margins are bonded together, the improvement comprising a first conduit means positioned in said heating station at least generally parallel to and spaced upwardly from the location which would be occupied by the upper surface of the first side margin of one of said blanks in said heating station, said first conduit having orifices therein spaced along the length thereof and directed at the location which would be occupied by said upper surface of said first side margin of the blank in said heating station, a second conduit means positioned in said heating station at least generally parallel to and spaced downwardly from the location which would be occupied by the lower surface of the second side margin of the blank in said heating station, said second conduit means having orifices therein spaced along the length thereof and directed at the location which would be occupied by the lower surface of said second side margin of the blank in said heating station, and means for supplying a hot gas to said first and second conduit means.

CHEMICAL

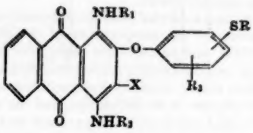
3,847,541
1,4-DIAMINO-2-ALKYLTHIOPHENOXY-3-HALOANTHRAQUINONE POLYESTER DYES

Guido Genta, Snyder, N.Y., assignor to American Aniline Products, Inc., Paterson, N.J.

Division of Ser. No. 243,059, April 11, 1972, Pat. No. 3,786,074. This application Aug. 9, 1973, Ser. No. 387,184
Int. Cl. C09b *1/00*

U.S. Cl. 8—39 **5 Claims**

1. A polyester textile material dyed with a compound of the formula



wherein R is methyl or ethyl;
each of R_1, R_2 and R_3 is independently hydrogen or lower alkyl, and
X is chlorine or bromine.

3,847,542
PROCESS FOR PREPARING FROSTED AND MULTICOLORED COTTON PILE FABRICS

Robert J. Harper, Jr., Metairie; Eugene J. Blanchard, New Orleans, and Gloria A. Gautreaux, Metairie, all of La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed June 1, 1973, Ser. No. 365,897
Int. Cl. D06p *5/12*

U.S. Cl. 8—66 **6 Claims**

1. A process for producing cotton pile fabrics which are frosted on one side which process comprises:
a. coating the fabric on one side with a crosslinking solution consisting of from about 3 to 20 weight percent of dimethylol ethyleneurea or dimethylol propyleneurea, from about 0.5 to 4.0 weight percent of an acid type catalyst, and from 0.3 to 1.2 weight percent of a thickener such as hydroxyethylcellulose,
b. drying the coated fabric from
a. at a temperature of about 60° C to 90° C for a period of 3 to 15 minutes,
c. curing the dry fabric from (b) at a temperature from 100° C to 170° C for a period of about 1 minute to 20 minutes,
d. dyeing the fabric from (c) with a reactive cotton dye,
e. hydrolyzing the crosslinking agent and thickener from the fabric using an acidic solution containing 0.4 weight percent (0.1N) hydrochloric acid for a period of 30 seconds to 10 minutes at a temperature from 50° to 90° C.

3,847,543
REDUCING SHRINKAGE OF TEXTILE MATERIALS

Clifford C. Carroll, Spartanburg, S.C., assignor to Deering Milliken Research Corporation, Spartanburg, S.C.

Filed Nov. 28, 1972, Ser. No. 310,197
Int. Cl. D06m *3/02, 15/52*

U.S. Cl. 8—127.6 **17 Claims**

1. A process for reducing the shrinkage of a woolen or polyacrylic fiber-containing textile material which comprises impregnating said textile with an aqueous dispersion of a cycloaliphatic polyisocyanate and a polyglycol having a molecular weight between about 300 and 12,000 and having four hydroxyl groups per molecule and four polyoxyalkylene chains including both polyoxyethylene and polyoxypropylene molecules, reacting said polyisocyanate and said polyglycol to render said textile less susceptible to shrinkage and drying said textile, the ratio of isocyanate groups in the polyisocyanate to hydroxyl groups in the polyglycol being between about 2:1 and 3:1.

3,847,544
BARRE REDUCTION PROCESS

Richard G. Quynn, Greensboro, N.C., assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Dec. 22, 1971, Ser. No. 211,052
Int. Cl. D06p *3/24, 3/52*

U.S. Cl. 8—178 **9 Claims**

1. A process for substantially reducing or eliminating thermal barre in a dyed fabric comprising textured synthetic yarns which have different dyeing characteristics caused by thermal variation in the texturing of the yarns, said process comprising dry heating said yarns, after texturing by a process from the group consisting of false-twist, stuffer-box, knife-edge, twist, gear, jet, and knit-deknit and before dyeing, at a temperature about equal to the highest temperature used in texturing the yarns, said dry heating being continued for a time period of from about 0.5 minutes to about 15 minutes until the effects of thermal variation in texturing have been equilibrated and only thereafter dyeing said yarns.

3,847,545
DIAGNOSTIC TEST FOR SICKLE-CELL

Edward Shanbrom, Santa Ana, and Allan L. Louderback, Temple City, both of Calif., assignors to Baxter Laboratories, Inc., Morton Grove, Ill., by said Louderback

Filed May 18, 1972, Ser. No. 254,584
Int. Cl. G01n *21/06, 33/16*

U.S. Cl. 23—230 B **8 Claims**

1. A reagent for the diagnosis of sickle-cell disease comprising a mixture of an aqueous phosphate buffer solution having a molarity of from about 2 to about 2.5 and a pH of from about 7 to about 7.2, a hemolyzing agent and a reducing agent, said buffer solution additionally containing from about 0.1 to about one mil. per liter of a non-ionic surfactant having a high water solubility and being selected from the group consisting of substances having the general formula $RC_6H_4(OC_2H_4)_nOH$ wherein R is octyl or nonyl and n is at least 3.

3,847,546
METHOD AND SYSTEM FOR THERMAL ANALYSIS

Donald G. Paul, Kennett Square, Pa., assignor to Chromalytics Corporation, Unionville, Pa.

Filed Oct. 4, 1972, Ser. No. 294,836
Int. Cl. G01n *25/00, 31/08*

U.S. Cl. 23—230 PC **17 Claims**

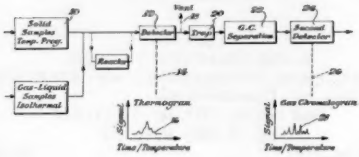
1. A system for the thermal analysis of materials comprising:
thermal means for subjecting said materials to heat thereby to produce effluent gases,
first detector means coupled to said thermal means for measuring a property of said effluent gases,
trap means coupled to said first detector means for storing said effluent gases,

first carrier gas means coupled to said thermal means for selectively passing said effluent gases from said thermal means through said first detector means to said trap means,

column means coupled to said trap means for separating said stored gases into their constituent components,

second detector means coupled to said column means for measuring a property of said constituent components, and

additional carrier gas means coupled to said trap means for



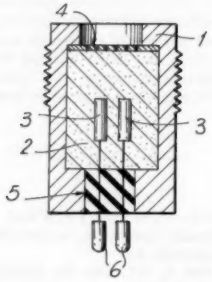
selectively passing said stored gases from said trap means through said column means and thence, after separation into said constiuent components, through said second detector means, thereby to permit the intermittent analysis of said effluent gases.

3,847,547

PROCESS AND APPARATUS FOR DETECTING OF THE PRESENCE OF A LIQUID

Jacques Claude Deigendre, Toulon; Alain Rogar Kerrenneur, Paris, and Georges Albert Berton, Toulon, all of France, assignors to Etat Francais, Armies, France

Filed Nov. 24, 1972, Ser. No. 309,596
Int. Cl. G01n *31/00, 33/18*
U.S. Cl. 23—230 L **8 Claims**



1. A process for the prompt detection of the presence of a liquid comprising effecting a fast reaction (B) between two reagents which comprise a pyrotechnical composition, initiating reaction (B) by the thermal effects of a reaction (A) of one of said reagents with the liquid to be detected, and detecting the presence of the liquid by the detection of reaction (B) using electrical means to detect a change in the electrical resistivity within the composition.

3,847,548

DUAL TEMPERATURE TRACER METHOD FOR DETERMINING FLUID SATURATIONS IN PETROLEUM RESERVOIRS

Theodore E. Keller, Yorba Linda, Calif., assignor to Union Oil Company, Los Angeles, Calif.

Filed Dec. 11, 1972, Ser. No. 313,687
Int. Cl. E21b *43/16;* **G01n** *33/24*
U.S. Cl. 23—230 EP **17 Claims**

1. A method for measuring the relative amounts of immiscible fluid phases present in a subterranean formation penetrated by a well in communication therewith and containing at least one mobile fluid phase, which comprises:

injecting a heat exchange fluid at a temperature substantially different than the temperature of the formation to adjust the temperature of the strata to be tested to about that of the injected fluids;

thereafter injecting a carrier fluid through said well and into said formation at the temperature of the injected heat exchange fluid, said carrier fluid being miscible with said mobile fluid and containing a low concentration of (1) at least one first tracer material that partitions between one of the fluid phases in the formation and the carrier fluid to a degree that varies with temperature and (2) at least one second tracer material having a partition coefficient that is independent of temperature;

shutting in said well for a time period sufficient for the injected fluids to come to temperature equilibrium with the formation;

producing said well to recover fluids from said formation;

analyzing said recovered fluids to determine the peak concentrations of said tracer materials in said fluids; and

applying chromatographic principles to determine the relative saturation of fluid phases present in said formation.

3,847,549

METHOD OF GEOCHEMICAL EXPLORATION

Karl S. Schorno, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 12, 1973, Ser. No. 340,357
Int. Cl. C10g *1/02, 1/04;* **G10n** *33/24*
U.S. Cl. 23—230 EP **4 Claims**

1. In a method of geochemical prospecting, the steps comprising:

extracting soluble organic matter from a sample obtained from an organic matter-containing formation in the earth's crust to obtain a rock residue containing insoluble organic matter;

disposing said rock residue containing insoluble organic matter in a noncombustion-supporting environment in the presence of water;

heating said rock residue at a constant elevated temperature for an extended period;

measuring after said heating the amount generated by said heating of soluble organic matter; and

measuring the quantity of extractable organic matter from said rock residue relative to the insoluble organic matter of said original rock to determine the oil generation capability of said formation.

3,847,550

DIFFERENTIAL CHROMATOGRAPHIC METHOD

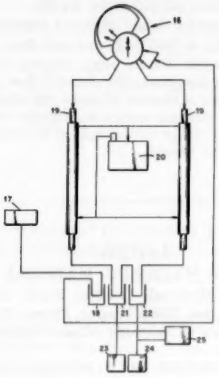
Charles D. Scott, and W. Wilson Pitt, Jr., both of Oak Ridge, Tenn., assignors to The United States of America as represented by the United States Atomic Energy Commission

Filed Mar. 27, 1973, Ser. No. 345,420
Int. Cl. G01n *33/16, 33/18, 31/08*
U.S. Cl. 23—230 B **9 Claims**

1. A method for carrying out differential chromatography comprising the steps of:

flowing eluent through at least two substantially identically packed chromatographic columns at substantially the same flow rates;

simultaneously introducing substantially equal volumes of samples into the eluent flow streams;
maintaining said columns at substantially the same temperature;
photometrically monitoring the outflow from each column



by photometer means;
differentially comparing the output of one photometer with that of another photometer; and
plotting the difference in said outputs so as to produce a differential chromatogram.

3,847,551
STANDARDIZING OF ALCOHOL-CONTENT MEASURING APPARATUS

Donald Hutson, Richmond, Calif., assignor to Cal Detect Inc., Richmond, Calif.

Filed May 18, 1972, Ser. No. 254,401
Int. Cl. G01n *33/16*
U.S. Cl. 23—232 R **5 Claims**

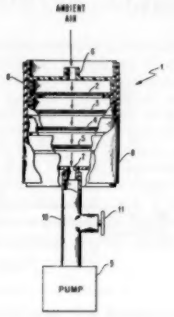
1. A composition for use in standardizing, calibrating, and testing apparatus for determining quantitatively the content of alcohol in gas samples consisting essentially of anhydrous argon and 50 to 5,000 parts per million ethyl alcohol.

3,847,552
ENVIRONMENTAL MONITORING DEVICE AND METHOD

Leonard Douglas Hobgood, Durham, and Jerry Alan Lorenzen, Raleigh, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 23, 1973, Ser. No. 418,321
Int. Cl. G01n *21/12*
U.S. Cl. 23—232 R **4 Claims**

1. A method of simultaneously measuring the quantitative presence of a plurality of gaseous atmospheric pollutants, comprising steps of:
depositing specific dry reagents individually on separate, air permeable substrates for each of said gaseous pollutants whose presence is to be measured;
sealing said substrates in an air tight package and arranged in a stack from top to bottom in an order in which no reagent substrate sensitive to more than one specific pollutant is placed higher in the stack than any substrate which carries a specific reagent for any of the pollutants to which said reagent on said higher substrate is reactive;
opening said package at a location whose degree of pollution from said plurality of gaseous pollutants is to be measured and passing a known volume of ambient atmosphere through said substrates from top to bottom;
resealing said package to prevent further reaction between the atmosphere and said reagents until the reactive products are analyzed;
opening and analyzing the reactive products present on said



substrates to determine from the amount of said reactive products present the amount of each of said pollutants present in said known volume of ambient air at said measured location.

3,847,553
TEST FOR A GIVEN CONSTITUENT IN A LIQUID

Bruno J. Verbeck, San Diego, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

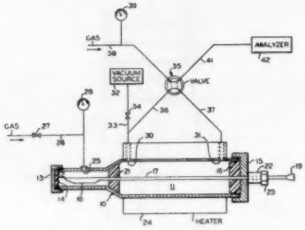
Continuation-in-part of Ser. No. 64,090, July 28, 1970, Pat. No. 3,672,845. This application June 23, 1972, Ser. No. 265,645The portion of the term of this patent subsequent to June 27, 1989, has been disclaimed.
Int. Cl. C12k *1/10;* **G01n** *31/22, 33/16*
U.S. Cl. 23—253 TP **3 Claims**

1. A testing device for determining the presence of a constituent in a liquid, comprising a carrier having uniformly applied over at least a portion of one surface thereof a layer of particulate hydrophilic absorptive material in the form of agglomerates which have been formed by first compressing into a compacted form a mixture of (a) particulate material which has been prepared by first impregnating one portion of particulate hydrophilic absorptive material with a solution of an indicator material which undergoes a color change in response to the presence of a reaction product formed when such constituent is contacted with a composition which reacts with said constituent, and then drying, and (b) particulate material which has been prepared by first impregnating a second portion of particulate hydrophilic absorptive material with a solution comprising said composition, and then drying, and then particulating said compacted form to form agglomerates comprising the two kinds of discrete particles of hydrophilic absorptive material and the product with which said particles have been impregnated.

3,847,554
ANALYSIS OF MATERIALS TO MEASURE VAPORIZABLE COMPONENTS

Tsung-Yuan Su, Greenville, S.C., assignor to Phillips Fibers Corporation, Greenville, S.C.

Filed Feb. 5, 1973, Ser. No. 329,559
Int. Cl. G01n *7/16, 33/36*
U.S. Cl. 23—253 PC **3 Claims**

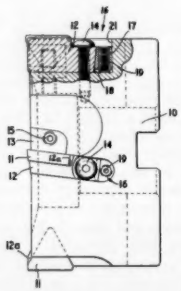


1. Apparatus adapted to be used in the analysis of materials to detect vaporizable components thereof comprising:
   a housing forming first and second chambers, said first chamber having first and second openings therein in spaced relationship with one another, said second chamber having a third opening therein;
   a barrier movably positioned so as to block communication between the two chambers when located in a first position and to permit communication between the two chambers when located in a second position;
   a pan connected to said barrier so as to be located in said second chamber when said barrier is in said first position; means connected to said barrier to move said barrier from said first position to said second position and thereby move said pan into said first chamber; and
   heating means associated with said first chamber to elevate the temperature thereof.

3,847,555
MILLING CUTTERS

John Owen Michael Pegler, Solihull, and Brian Edward George Mapes, both of Tenbury Wells, England, assignors to Richard Lloyd Limited, Birmingham, England

Filed May 25, 1972, Ser. No. 256,857
Claims priority, application Great Britain, June 3, 1971, 18708/71
Int. Cl. B26d *1/12*
U.S. Cl. 29—105 R **15 Claims**

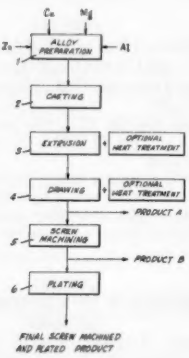


1. A milling cutter comprising:
   a. a body,
   b. at least one shoe adjustably secured to said body with a first screw means passing through the shoe into said body,
   c. a cutting insert located in said shoe, and
   d. adjustment means for adjusting the position of the shoe along a direction of movement with respect to the body to vary the extent of projection of the cutting insert from the body,
   e. said adjustment means including a wedge member and rotatably mounted second screw means,
   f. said wedge member being disposed between opposing surfaces located on said body and said shoe,
   g. said second screw means being adapted to move the wedge member longitudinally of the screw means when the screw means is rotated whereby the shoe and insert located on the shoe are moved transversely of the second screw means by wedge action against the securing action of the first screw means.

3,847,556
SCREW MACHINING MATERIAL

Edouard Gervais, Montreal, Quebec; Pierre Chollet, Pierrefonds, Quebec, and Robel Ranger, Perrot, Quebec, all of Canada, assignors to Noranda Mines Limited, Toronto, Ontario, Canada

Division of Ser. No. 205,581, Dec. 7, 1971, Pat. No. 3,748,188.
This application Feb. 12, 1973, Ser. No. 331,860
Int. Cl. B21c *1/00*
U.S. Cl. 29—187 **8 Claims**



1. Alloy having adequate dimensional stability and chip forming characteristics for screw machining purposes, consisting essentially of 20 to 35 percent by weight aluminum, 4 to 10 percent by weight copper and a positive amount of up to about 0.2 percent by weight magnesium, the rest being zinc apart from incidental impurities.

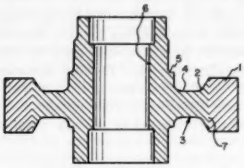
3,847,557
GEAR BLANKS

William H. Miller, 877 Valleyview Rd., Pittsburgh, Pa. 15243

Filed Aug. 20, 1973, Ser. No. 389,873
Int. Cl. B22d *13/00*
U.S. Cl. 29—191 **9 Claims**

1. A centrifugally cast bi-metal gear blank consisting of an outer rim of tin bronze, an inner annulus of yellow brass and

a diffusion zone between the tin bronze of said outer rim and the yellow brass of said inner annulus, whereby a metallurgical



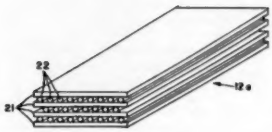
bond exists between the tin bronze of the outer rim and the yellow brass of the inner annulus in the diffusion zone.

3,847,558

TITANIUM-BERYLLIUM REINFORCED MATRICES

Ronald E. Trabocco, Blue Bell, and John J. DeLuccia, Devon, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 24, 1972, Ser. No. 283,434
Int. Cl. B23p *3/20*
U.S. Cl. 29—191.4 4 Claims



1. A composite material comprising:
a plurality of titanium alloy sheets; and
a plurality of beryllium wires located between all adjacent said sheets and explosively welded to said titanium alloy sheets forming a titanium matrix reinforced with beryllium wherein said beryllium wires have a helical titanium wrapping.

3,847,559

EROSION RESISTANT COMPOSITES

Barry David Reznik, Brooklyn, N.Y., assignor to DeWiant Corporation, Detroit, Mich.

Filed May 28, 1969, Ser. No. 828,702
Int. Cl. B32b *15/00*
U.S. Cl. 29—195 7 Claims

1. An erosion resistant metal composite comprising an alloy substrate as its principal component and a coating composition bonded to said substrate, said coating consisting essentially of nickel, chromium, boron, silicon and titanium carbide in the following percentages by weights of said coating composition:

nickel	14% to 80%
chromium	0.5% to 10%
boron	0.2% to 5%
silicon	0.3% to 8%
titanium carbide	6% to 82%

said composite exhibiting erosion resistance at substantially all angles of impact of solids.

3,847,560

CORROSION RESISTANT METALLIC MULTILAYER STRUCTURE

Charles D. Turk, Norwood, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed July 30, 1969, Ser. No. 846,132
Int. Cl. B32b *15/00, 15/18, 15/20*
U.S. Cl. 29—196.3 2 Claims

1. A composite corrosion-resistant laminated metallic structure consisting essentially of a core layer of metallic material of selected thickness to be protected against corrosion and at least one multilayer metallic material of relatively much smaller thickness metallurgically bonded to at least one side of said core layer to form an outer surface of said structure protecting said core layer against corrosion, said multilayer material comprising a single layer of a first metal sandwiched between and metallurgically bonded to a pair of other metal layers, said single layer of said first metal in said multlilayer material being relatively more anodic and relatively much thicker than either of said pair of other metal layers in said multilayer material.

3,847,561

PETROLEUM MIDDLE DISTILLATE FUEL WITH IMPROVED LOW TEMPERATURE FLOWABILITY

Nicholas Feldman, Woodbridge, N.J., assignor to Exxson Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 157,615, June 28, 1971, abandoned. This application June 4, 1973, Ser. No. 366,537
Int. Cl. C10l *1/22*
U.S. Cl. 44—62 9 Claims

1. A petroleum distillate fuel having a boiling range within the limits of about 250°F. and about 700°F. which has been improved with respect to its low temperature flow properties by adding thereto:

a. about 0.01 to 2.5 wt. percent of a microcrystalline paraffin wax and

b. about 0.005 to 0.5 wt. percent of a fuel-soluble additive component selected from the group consisting of:

i. a halogenated ethylene-containing polymer having a halogen content of from 1 to 40 wt. percent, and

ii. a hydrocarbyl succinamic acid material of the formula:

$$R - \underset{\displaystyle CH_2-\ COX_3}{\overset{\displaystyle CH\ -\ COX_2}{|}}$$

wherein R is a straight chain aliphatic hydrocarbon having from 0 to 1 site of olefinic unsaturation of from 14 to 40 carbon atoms and attached at a secondary carbon atom to the succinyl group; one of X^2 and X^3 is $-NYY^1$, wherein Y and Y^1 are aliphatic hydrocarbyl groups of from 14 to 40 carbon atoms, the other of X^2 and X^3 is of the formula:

$$-OH(NHY^2Y^3)n$$

wherein n varies from 0 to 1, Y^2 and Y^3 are hydrogen, aliphatic hydrocarbon of from 1 to 30 carbon atoms or oxyaliphatic hydrocarbon of from 1 to 30 carbon atoms, and may be taken together with the nitrogen to which they are attached to form a heterocyclic ring of from five to seven annular members.

3,847,562

GAS PRODUCER HAVING ASH REMOVAL PLATES WITH INDIVIDUAL TEMPERATURE SENSING

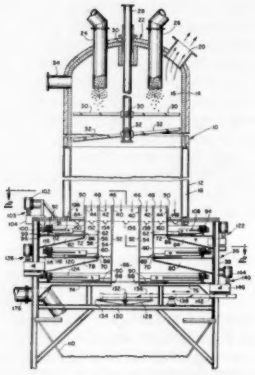
George M. Hamilton, Marlton, N.J., assignor to McDowell-Wellman Engineering Company, Cleveland, Ohio

Filed Jan. 11, 1973, Ser. No. 322,738
Int. Cl. C10j *3/52*
U.S. Cl. 48—76 6 Claims

1. A furnace apparatus comprising in combination:
a. a shaft furnace body having a central axis;

b. means for transversely subdividing said furnace into a plurality of zones adjacent the lower end thereof including a plurality of concentrically disposed tubular members having as their common axis the central axis of the shaft furnace;

c. each of said tubular members having adjacent its lower end a horizontal plate for collection of ash from the corresponding zone, said horizontal plates being in axially



stepped relation, the plate for the innermost zone being at the lowest step;

d. separate means for removing ash from each of said plates;

e. means in each tubular member for sensing temperature;

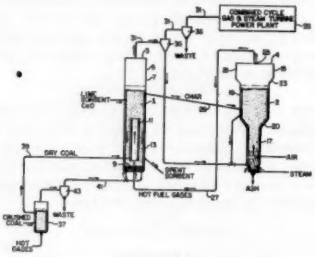
f. and separate means responsive to said temperature sensing means for independently controlling the rate of ash removal from each of said zones, respectively.

3,847,563

MULTI-STAGE FLUIDIZED BED COAL GASIFICATION APPARATUS AND PROCESS

David H. Archer, and Dale L. Keairns, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corporation, Pittsburgh, Pa.

Filed May 2, 1973, Ser. No. 356,665
Int. Cl. C10j *3/68*
U.S. Cl. 48—77 **11 Claims**



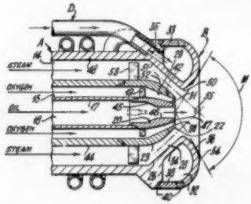
1. Apparatus for completely gasifying coal to provide a gaseous fuel, said apparatus comprising means for devolatilizing coal resulting in the production of char, separate means for totally gasifying the char and separating ash therefrom, said devolatilizing and gasifying means having means disposed therein for fluidizing particulate materials supplied thereto, conduit means connecting said devolatilizing and gasifying means to transfer products therebetween, said devolatilizing means having a tubular member completely immersed in the fluidized particulate material therein, said tubular member being in a substantially upright position to form an annular chamber with said devolatilizing means means for supplying coal to the inside of said tubular member, means for supplying hot gases from said gasifying means to the inside of said tubular member, said tubular member being disposed above the lower end of the devolatilizing means, whereby the influent coal flows upwardly in said tubular member becoming devolatilized to form char, the char flowing downwardly along the outside of the tubular member in said annular chamber and being mixed with the influent coal as said coal flows upwardly within said tubular member to prevent agglomeration of the influent coal.

3,847,564

APPARATUS AND PROCESS FOR BURNING LIQUID HYDROCARBONS IN A SYNTHESIS GAS GENERATOR

Charles P. Marion, Mamaroneck, N.Y., and Blake Reynolds, Riverside, Conn., assignors to Texaco Development Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 5,444, Jan. 23, 1970, Pat. No. 3,743,606, which is a continuation-in-part of Ser. No. 787,885, Dec. 30, 1968, abandoned. This application Nov. 20, 1972, Ser. No. 308,067The portion of the term of this patent subsequent to July 3, 1990, has been disclaimed.
Int. Cl. C07c *1/02*
U.S. Cl. 48—95 **19 Claims**



1. A burner, for introducing a liquid hydrocarbon, a free-oxygen-containing gas, and a temperature moderator into a gas generator in which reaction takes place at a minimum temperature of about 1,200°F. comprising:

1. a central axial tubular conduit, inlet means at the upstream end of said central conduit, a central discharge nozzle at the downstream end of said central conduit having an inwardly converging tapered outer surface and a single unobstructed circular discharge passage;
2. an intermediate coaxial concentric tubular conduit disposed radially about the outside of said central tubular conduit along its length, inlet means at the upstream end of said intermediate concentric conduit, an intermediate coaxial concentric inwardly converging frusto-conically shaped discharge nozzle with a circular tip at the downstream end of said intermediate concentric conduit, means for positioning said central axial conduit and central discharge nozzle with respect to said intermediate concentric conduit and intermediate discharge nozzle in spaced relationship thereby providing an intermediate annular passage having a single unobstructed inwardly converging intermediate annular discharge passage at the downstream end;
3. an outer coaxial concentric tubular conduit radially disposed about the outside of said intermediate coaxial concentric conduit along its length, inlet means at the upstream end of said outer concentric conduit, an outer coaxial concentric inwardly converging frusto-conically shaped discharge nozzle at the downstream end of said outer concentric conduit, means for positioning said outer concentric conduit and outer discharge nozzle with respect to said intermediate concentric conduit and inter-

mediate discharge nozzle in spaced relationship thereby providing an outer annular passage having an unobstructed inwardly converging annular passage that discharges into a single unobstructed concentric coaxial outwardly diverging central passage at the downstream tip of said burner;

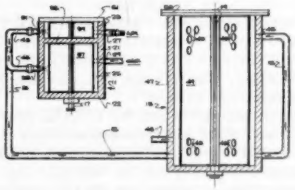
4. a coolant chamber at the downstream tip of said burner comprising an inside section that comprises said outer inwardly converging frusto-conically shaped discharge nozzle of (3), an outside section that extends from and flares out from said inside section and which comprises an outwardly diverging section with an annular face of convex configuration at the outer extremity of the downstream tip of the burner, said outside section being in part the peripheral surface of said outwardly diverging tapered central passage of (3), a collar section joining said inside and outside sections and closing said coolant chamber, and inlet and outlet means for circulating coolant through said coolant chamber; and
5. conduit means in contact with said burner and connected to said inlet and outlet means for passing coolant in direct heat exchange with said burner.

3,847,565

COMBUSTION IMPROVER

Sanders Ford, Jr., Richmond, Calif., assignor to Social Dynamics Inc., Berkeley, Calif.

Filed Mar. 19, 1973, Ser. No. 342,499
Int. Cl. B01f *3/02*; C10k
U.S. Cl. 48—180 S **1 Claim**



1. A combustion improver comprising

a powered pump, said pump having a hollow body divided into separate larger and smaller chambers with separate inlet and outlet ports, a shaft rotatably mounted within said body and having a plurality of blades mounted thereon, said blades substantially filling the space between the shaft and the inside diameter in each of said chambers, said larger chamber in said powered pump being approximately three times the volume of said smaller chamber,

a source of compressed air,

a conduit fluidly connecting said source of compressed air to the inlet of said smaller chamber,

a source of pressurized gas,

a conduit fluidly connecting said pressurized gas to said inlet of said larger chamber, whereby, when said shaft is rotated, said blades will rotate in said separate chambers to act upon the gas and air entering into said chambers to force the same through said outlets of said chambers into a common conduit for mixing of the gas and air in a substantially three to one gas to air ratio at substantially the same pressure as the gases entering said chambers, and

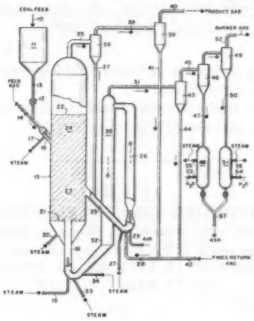
a powered homogenizer fluidly connected to said common conduit for more completely mixing said air and said gas, said homogenizer including a hollow body having a shaft mounted centrally thereof and an outlet port for connection to a gas burner or the like, said shaft having a plurality of blades mounted thereon, and substantially filling the space between the shaft and the inside diameter of said body, said blades having a plurality of bores extending therethrough whereby, when said shaft and said blades are rotated, said gas and said air contained within said homogenizer will be completely and homogeneously mixed.

3,847,566

FLUIDIZED BED GASIFICATION PROCESS WITH REDUCTION OF FINES ENTRAINMENT BY UTILIZING A SEPARATE TRANSFER LINE BURNER STAGE

Edward L. Wilson, Baytown, Tex., assignor to Exxon Research and Engineering Company, Linden, N.J.

Filed Apr. 12, 1973, Ser. No. 350,668
Int. Cl. C10j *3/00*
U.S. Cl. 48—202 **18 Claims**



1. In a process for the preparation of a product gas by reacting steam with carbonaceous solids in a fluidized bed reaction zone wherein said product gas is taken off overhead from said reaction zone and wherein a stream of solid carbonaceous particles is continuously withdrawn from the said reaction zone and heated by contacting said particles with an oxygen-containing gas in a transfer line burner, the improvement which comprises separating solid fines from said product gas, introducing said fines into said transfer line burner for combusting said fines with said oxygen-containing gas while in the presence of said stream of carbonaceous particles to heat said carbonaceous particles, and thereafter returning the heated carbonaceous particles from said transfer line burner to said reaction zone.

3,847,567

CATALYTIC COAL HYDROGASIFICATION PROCESS

Theodore Kalina, Morris Plains, N.J., and Roger E. Moore, El Paso, Tex., assignors to Exxon Research and Engineering Company, Linden, N.J.

Filed Aug. 27, 1973, Ser. No. 391,082
Int. Cl. C10j *3/06*
U.S. Cl. 48—202 **12 Claims**

1. A process for the manufacture of methane which comprises:

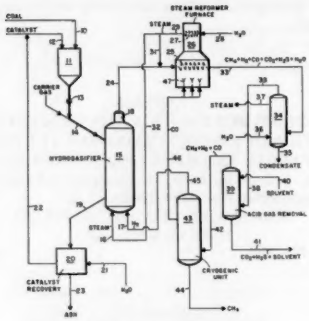
a. reacting finely divided carbonaceous solids with steam and hydrogen in the presence of an alkali metal catalyst in a hydrogasifier and withdrawing a methanerich gas overhead from said hydrogasifier;

b. reacting said methane-rich gas with steam in a catalytic steam reforming furnace and withdrawing a methane-rich gas of increased hydrogen content from said reforming furnace;

c. treating said gas of increased hydrogen content for the

removal of acidic constituents;

d. separating the treated gas into a product methane stream, a hydrogen stream, and a carbon monoxide stream;



e. recycling at least a portion of said hydrogen stream to said hydrogasifier; and

f. burning at least a portion of said carbon monoxide stream as fuel in said steam reforming furnace.

3,847,568

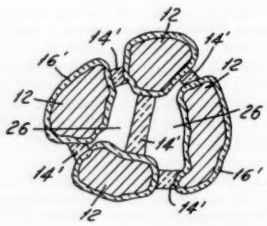
VITRIFIED ABRASIVE ELEMENT

John A. Cihon, and Donald W. Ehmann, both of Owosso, Mich., assignors to MWA Company, Owosso, Mich.

Filed Sept. 18, 1972, Ser. No. 290,128

Int. Cl. B24d *3/14, 3/18*

U.S. Cl. 51—295 **10 Claims**



1. A vitrified abrasive element comprising abrasive grit composed primarily of grains of aluminum oxide (Al_2O_3), a porous ceramic bonding material, and a glass which coats and is bonded to said abrasive grit and is bonded to said ceramic bonding material, said glass having no more than trace amounts of compounds of the R_2O_3 type in which R represents any positive ion.

3,847,569

METHOD OF MAKING A CABLE TYPE SAW

Henry A. Snow, Rindge, N.H., assignor to Helen E. Snow, Rindge, N.H.

Continuation of Ser. No. 171,513, Aug. 13, 1971. This application May 18, 1973, Ser. No. 361,401

Int. Cl. C04b *31/16*

U.S. Cl. 51—309 **3 Claims**

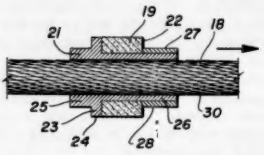
1. A method of forming a cable type saw, comprising the steps of:

a. forming a main body element of malleable metal having two axially adjacent cylindrical portions, one portion having a large diameter and the other portion having a small diameter,

b. placing the body element in a bore in a die, which bore has the same diameter as the said large diameter,

c. placing a powdered abrasive substance in the space between the surface of the bore and the portion of small diameter,

d. pressing the substance in the space axially toward the portion of large diameter, thereby causing a part of the small diameter portion to extend axially beyond the substance,



e. raising the temperature of the pressed substance to produce a solid body,

f. forming a centrally-located axially-directed bore in the body,

g. placing a piece of flexible cable through the bore in the body,

h. placing a collar concentrically over the said part of the small diameter portion, and

i. swaging the collar so that it fixedly engages the body and so that the body fixedly engages the cable.

3,847,570

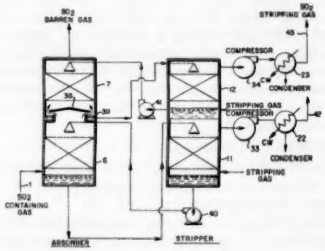
ABSORPTION OF SO_2 FROM A DILUTE GAS AND DESORPTION AT A HIGHER CONCENTRATION IN A STRIPPING GAS AT SUB-ATMOSPHERIC PRESSURE

Arnold Gunther, West Orange, N.J., assignor to Treadwell Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 152,232, June 11, 1971, abandoned, which is a continuation-in-part of Ser. No. 132,752, April 9, 1971, abandoned, which is a continuation-in-part of Ser. No. 860,183, Aug. 13, 1969, abandoned. This application Apr. 30, 1973, Ser. No. 355,809

Int. Cl. B01d *53/14*

U.S. Cl. 55—73 **2 Claims**



1. A process for SO_2 recovery from a gas in which

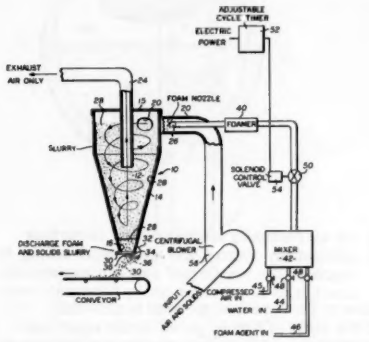
a. SO_2 is absorbed in aqueous solutions in a sequence of absorption zones, said gas passing from zone to zone of absorption and therefrom to disposal,

b. SO_2 is recovered from said aqueous solutions in a sequence of stripping zones with a fixed stripping gas for each stripping zone under vacuum, passing said stripping gas through each stripping zone to compression, and

c. each of said aqueous solutions is recycled between a zone of absorption and a zone of stripping in corresponding sequence, each aqueous solution recycled from a strip-

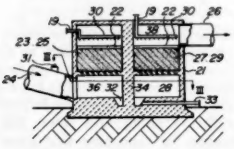
ping zone to an absorption zone being at least partially stripped.

3,847,571
CYCLONE SEPARATOR WITH FOAM SUPPLY
Howard W. Cole, Jr., 12 Vale Dr., Mt. Lakes, N.J. 07046
Filed Sept. 11, 1973, Ser. No. 396,246
Int. Cl. B01d *47/00*
U.S. Cl. 55—87 **12 Claims**



1. A cyclone separator including in combination a chamber, a gas outlet at the upper end thereof and in generally axial alignment with the longitudinal axis of the chamber, but of substantially less cross section than that of the upper end of the chamber, an inlet passage through which particulate-laden gas enters the chamber, said inlet passage being located at the upper part of the chamber and directed generally tangential of the cyclonic separation chamber with a downward component, a nozzle means in position to direct a stream of foam into the gas stream of said inlet passage in a position for the foam to travel with the gas flow down the sides of the separation chamber to coat said sides and retain particulate matter collected from the gas stream, and an outlet at which a slurry of particulate matter and foam collects at the bottom of the chamber and from which the slurry is discharged.

3,847,572
APPARATUS FOR DESULFURIZING FLUE GAS
Yukio Hishinuma; Norio Arashi, and Zensuke Tamura, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed July 3, 1972, Ser. No. 268,453
Claims priority, application Japan, June 14, 1971, 46-51720
Int. Cl. B01d *53/04*
U.S. Cl. 55—179 **10 Claims**

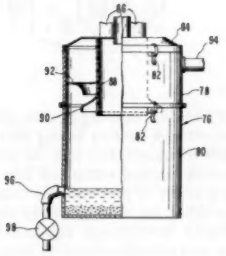


1. An apparatus for desulfurizing flue gas comprising: a column; an adsorbent bed in said column divided into a plurality of compartments; common spaces provided at the upper portions and the lower portions of the column and communicating with each other through the compartments; inlet and outlet common flue ducts communicating with the lower and upper common spaces, respectively; and water sprayers provided at the upper common space above each of the compartments; the upper and lower common spaces being free of valves for individually controlling the flow of flue gas and desulfurized flue gas through respective compartments in said adsorbent bed.

ERRATUM

For Class 55—290 see:
Patent No. 3,847,586

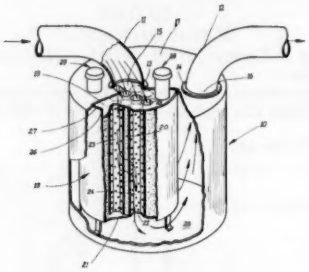
3,847,573
DENTAL OFFICE SYSTEM
Stanton D. Gandrud, 20681 McClellan Rd., Cupertino, Calif. 95014
Continuation-in-part of Ser. No. 122,954, March 10, 1971, abandoned. This application Jan. 28, 1974, Ser. No. 436,943
Int. Cl. B01d *45/08*
U.S. Cl. 55—319 **15 Claims**



1. A dental office vacuum system comprising
a housing,
input means in the top of said housing for accepting at least one input tube,
an open bottomed cylindrical member having its top fixed to said housing so that said input means opens into said member, the area of said cylindrical member relative to the total area of said at least one input tube being great enough to cause the incoming air velocity to decrease sufficiently to allow water vapor to condense,
first baffle means encircling the lower portion of said cylindrical member and attached to said cylindrical member above the open bottom thereof;
second baffle means around the inner wall of said housing and above said first baffle means, said second baffle means extends outward from the interior wall of said housing and curves downward toward said first baffle means,
an output connectible in said housing above said first and second baffle means,
an external vacuum pump operatively connected to said output downstream of said separator,
a waste output on the side of said housing below said first and second baffle means whereby said housing below said waste output forms a precious metal collector,
at least one main vacuum line connected to said input means in said housing as an input tube,
an automatic valve means connected to one end of each said main line for providing said continuous air flow through said lines when said vacuum pump is connected to the other end of said output in said housing, and
a plurality of dental handpieces connected through tubes to said main vacuum line at a point between said automatic valve and said separator, said dental handpieces each

including a housing having an aperture therethrough and valve means for selectively blocking said aperture.

3,847,574
CHARCOAL FILTER ARRANGEMENT
James F. Fish, Louisville, Ky., assignor to American Air Filter Company, Inc., Louisville, Ky.
Filed Mar. 14, 1973, Ser. No. 341,126
Int. Cl. B01d *53/14*
U.S. Cl. 55—387 **3 Claims**



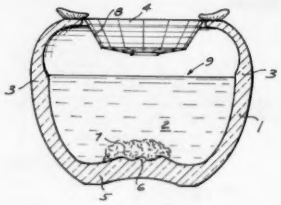
1. A carbon filter for removing gaseous contaminants comprising: a flow-through housing having inlet and outlet connections in flow communication with the interior thereof;

a filter assembly, located within said flow-through housing having a plurality of geometrically shaped flow-through axially extending exit chambers and a plurality of geometrically shaped flow-through axially extending entrance chambers, said entrance chambers being in flow communication with said inlet connection and said exit chambers being in flow communication with said outlet connection, said filter assembly being cylindrical and comprises said plurality of flow-through axially extending exit and entrance chambers positioned equidistant from each other in alternating fashion such that each flow-through entrance chamber is adjacent at least two flow-through exit chambers and each flow exit chamber is adjacent at least two flow-through entrance chambers, said cylindrical filter assembly located within said cylindrical housing additionally comprises a peripheral skirt extending from one end thereof which is sealingly attached to one end of said housing, circumscribing said inlet connection of said housing, to form an inlet plenum in flow communication with said connection and the entrance chamber of said filter assembly;

granulated activated charcoal disposed within the space between said entrance chambers and said exit chambers to form a loosely packed granular charcoal filter bed of uniform flow-through thickness; and

forced-feed charcoal reservoir means extending through the walls of said housing to allow access to said reservoir from outside said housing, said reservoir means containing flowable particulate activated charcoal in flow communication with said charcoal filter bed to keep said bed continuously filled, said forced feed charcoal reservoir means comprises an elongated cylindrical container filled with flowable particulate activated charcoal in flow communication with the filter bed of said filter assembly, said cylindrical container having a removable screw cap, flat solid plate means concentrically positioned therein contactijng said flowable particulate activated charcoal, and spring means abutting said screw cap and biasing said solid plate means against said charcoal in said reservoir to keep constant pressure on said charcoal filter bed of the filter assembly.

3,847,575
AIR FRESHENING ASH TRAY DEVICE
Carol Harding, Mundelein, Ill., assignor to The Raymond Lee Organization, Inc., New York, N.Y., a part interest
Filed Dec. 11, 1972, Ser. No. 314,153
Int. Cl. B01d *47/02*
U.S. Cl. 55—244 **5 Claims**



1. An air freshening ash tray device, comprising

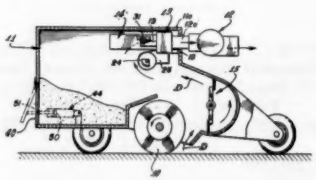
a substantially symmetrical glass bowl having an open mouth at the top thereof and curving inwardly at the mouth, said bowl being partially filled with water;

soda at the bottom of the bowl in the water;

a few drops of lightweight oil on the water; and

a wire basket of concentric wire rings of different diameters depending into the bowl mounted on and supported by the bowl at the mouth thereof and spaced from the surface of the water whereby smoke and odors are drawn to the bottom of the bowl.

3,847,576
STREET SWEEPER FILTER SHAKER SYSTEM
Jack O. Oberdank, Corona, Calif., assignor to Wayne Manufacturing Company, Pomona, Calif.
Filed Mar. 27, 1972, Ser. No. 238,417
Int. Cl. B01d *46/04*
U.S. Cl. 55—283 **5 Claims**

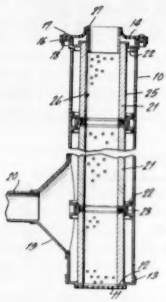


1. In a street sweeper having a dirt receiving chamber having side walls, a manifold in said chamber, an air filter projecting generally horizontally and in cantilever fashion from said manifold, a suction blower connected to the manifold, means for mounting said filter in said chamber for vibratory motion, and a vibrator for vibrating said filter; the improvement wherein said means for mounting said filter for vibratory motion comprises arm means connected to said manifold, pivot means connected to said arm means including a rotatable shaft for mounting to a dirt chamber side wall so as to accommodate oscillation of said manifold about a generally horizontal axis, said vibrator being connected directly to said manifold and being disposed at a position offset from said pivot means operation of said vibrator oscillating said manifold and the projecting filter about the axis of said pivot means.

3,847,577
AIR FILTER

Erik J. Hansen, Ann Arbor, Mich., assignor to Inter-Nation Research Corporation, Ann Arbor, Mich.

Continuation-in-part of Ser. No. 73,714, Sept. 20, 1970, abandoned. This application Feb. 2, 1973, Ser. No. 329,116
Int. Cl. B01d *27/08*
U.S. Cl. 55—385 **7 Claims**

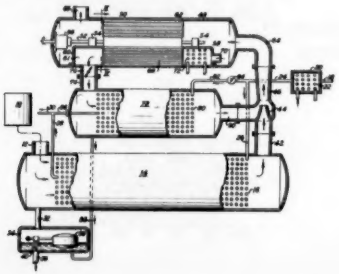


1. An air filter for use with internal combustion engines which comprises a substantially cylindrical housing having a closed bottom and an open top, a filtered air outlet disposed through the cylindrical surface, a top cover having a centrally disposed opening therethrough secured to the top of the housing, a plurality of tubular filter elements having a central opening and a perforated cover extending the length of each filter element, said filter elements being placed one atop the other inside the housing and secured to the bottom wall and to each other, said filter elements being substantially equidistantly spaced from the interior cylindrical walls of the housing, and an intake tube disposed through the centrally disposed opening in the cover such that a portion of the intake tube is disposed within the central opening of the uppermost filter element and the remainder of the intake tube extends upward through the centrally disposed opening in the cover.

3,847,578
APPARATUS FOR DRYING COMPRESSED AIR

Carl Georg Munters, 3, Danderydsvagen, Stocksund, Sweden

Continuation of Ser. No. 669,011, Sept. 20, 1967, abandoned. This application May 6, 1971, Ser. No. 140,934
Claims priority, application Sweden, Mar. 29, 1967, 4313/67
Int. Cl. B01d *53/06*
U.S. Cl. 55—390 **2 Claims**

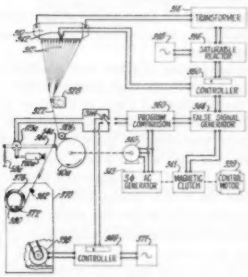


1. Apparatus for compressing and drying of air comprising a compressor and a condenser, means for cooling the condenser, means for passing warm compressed air to said condenser for condensing moisture therein, a rotary moisture sorption device having a main drying section, a secondary drying section and a regeneration section operative in sequence as said rotary device rotates, means for passing cooled air from which the moisture is condensed from said condenser in a main stream to the main drying section of said rotary sorption device, means for separating a side stream from said main stream, means for heating said side stream, and passing said side stream through said regeneration section for regenerating the same, means for cooling and condensing moisture from the moisture-laden air evolved from said regeneration section and passing said cooled regeneration air to said secondary drying section and means for returning said dried secondary section air and said regeneration air to said main stream.

3,847,579
METHOD OF AND APPARATUS FOR PROCESSING LINEAR ELEMENTS

Walter F. Fulk, Newark, and Phra D. Lyle, Granville, both of Ohio, assignors to Owens-Corning Fiberglass Corporation, Toledo, Ohio

Filed Mar. 22, 1973, Ser. No. 343,768
Int. Cl. C03b *37/02*; **B65h** *54/02*
U.S. Cl. 65—11 W **23 Claims**



1. Apparatus for controlling the tension of linear material between material feeding and collecting means, comprising

a. means for collecting linear material into a package;

b. means for delivering the linear material to said collecting means;

c. means for adjusting at least one of the rates of collection and delivery relative to the other of the rates;

d. means for providing a predetermined tension on said linear material between said delivering and collecting means including means for yieldingly biasing said linear material away from a straight path between the delivering and collecting means, and means responsive to the position of said biasing means for adjusting the relative rates of delivery and collection to maintain the desired tension on said linear material; and

e. means for selectively controlling the rate of movement of said biasing means including means responsive to increasing tension for retarding the rate of movement of said biasing means during the final portion of travel in response to increased tension thereby substantially preventing overadjustment of the relative rates of delivery and collection of the linear material and means responsive to decreasing tension for inhibiting the action of said retarding means to enable said biasing means to maintain contact with said linear material to prevent slack from developing in said linear material.

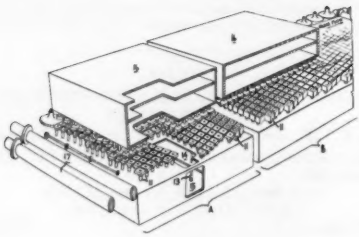
3,847,580
METHOD OF TEMPERING GLASS

George W. Misson, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 40,295, May 25, 1970, abandoned, which is a continuation-in-part of Ser. No. 838,015, June 18, 1969, abandoned, which is a continuation of Ser. No. 596,496, Nov. 23, 1966, abandoned. This application Mar. 21, 1973, Ser. No. 343,306

Int. Cl. C03b 27/00

U.S. Cl. 65—25 A 4 Claims



1. An improved method of tempering soda-lime glass in sheet form which comprises,

heating said sheet of glass substantially uniformly throughout its thickness to a temperature approaching its softening temperature,

supporting said sheet of glass on a modular gas support bed affording a relatively high heat transfer coefficient,

applying to said sheet of glass, as it moves edgewise in a first stage of quenching, supporting flows of cooling gas on one side of said sheet of glass and opposing flows on the opposite side that are at a first and relatively high volumetric flow rate of cooling gas per unit of surface-support area until the center plane temperature of said sheet of glass is reduced to below the strain point of the glass and the surface temperature of said sheet of glass is reduced to below the center plane temperature,

and then in a second stage of quenching, applying to said sheet of glass, as it continues to move edgewise, supporting and opposing flows of cooling gas that are at a second and relatively lower volumetric flow rate of cooling gas per unit of surface-support area until the surface and center plane temperatures of said sheet of glass are further reduced to substantially below the strain point of the glass, whereby tempering of the glass is effected with less total power consumption than is required when there is used a single flow rate per unit of surface-support area adequate to obtain the desired degree of temper in said glass.

3,847,581
GLASSMAKING DIAMETER SENSING

Homer D. F. Peters, Sylvania; Robert R. Rough, and William H. Ryan, both of Toledo, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed July 2, 1973, Ser. No. 375,677

Int. Cl. C03b 5/00, 5/14

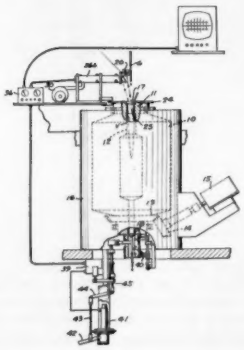
U.S. Cl. 65—29 3 Claims

1. In the refining of molten glass wherein unrefined molten glass is continuously introduced into one end of an open-ended chamber, the chamber is continuously rotated to form a void and cause the gaseous inclusions to be removed by the action of centrifugal force and the glass is continuously removed from the other end of the chamber, the method of controlling the mass of glass in the rotating chamber which comprises the steps of:

directing a beam of ultraviolet radiant energy at least periodically against a portion of the inner surface of the void formed in the rotating mass of molten glass;

positioning a platinum marker in said chamber adjacent to the wall of the chamber so that the marker is in the path of the rotating glass mass such that varying portions of said marker are exposed to said directed radiant energy beam, the area of said portion of the marker exposed being dependent on the diameter of the void formed in the rotating mass of molten glass;

directing the line of vision of a video camera toward the



area of the void and said marker, said area being periodically illuminated by said ultraviolet light radiant energy beam;

producing an image of the illuminated exposed portion of said marker by utilizing a reflected portion from said marker of said directed energy beam;

producing an electrical signal whenever the image of the exposed area of the marker deviates from a standard image by a pre-selected difference; and controlling the amount of molten glass in the chamber in response to said produced electrical signal by moving a chamber orifice blocking device into an orifice blocking position.

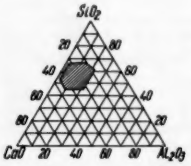
3,847,582
METHOD OF CONTINUOUS FABRICATION OF GLASS-RYSTALLINE MATERIALS WITH RIB CONFIGURATION

Mikhail Ivanovich Kozmin, ul. Shmidta, 31, kv. 6, Konstantinovka Donetskoi oblasti, U.S.S.R.

Continuation-in-part of Ser. No. 148,984, June 1, 1971, abandoned, which is a continuation of Ser. No. 746,386, July 22, 1968, abandoned. This application Nov. 2, 1971, Ser. No. 195,079

Int. Cl. C03b 29/00, 13/00

U.S. Cl. 65—33 1 Claim



1. A method for the continuous fabrication of glass-crystalline material comprising: melting a $CaO\text{-}Al_2O_3\text{-}SiO_2$ system charge suitable for the manufacture of glass-crystalline

material; forming the glass material obtained from the melted charge into a strip; producing, in the course of forming, a pattern of intersecting ribs on the lower surface of the strip with the ribs forming on the said surface a square-faced polycaisson structure; crystallizing the formed strip in a lehr by heating the strip to a temperature of 900°–980° while the said strip is advanced on a conveying roller through the lehr, tempering the crystallized strip; said ribs being formed with trapezoidal shape in cross-section, not more than 2 mm in depth and width and spaced at a distance of at least 5 mm between two adjacent ribs by virtue of which the ribs acquire mechanical strength more rapidly in the course of crystallization than the remaining glass material while the polycaisson structure formed by the ribs on the lower surface of the strip tends to impart a degree of rigidity to the latter.

3,847,583
PROCESS FOR THE MANUFACTURE OF MULTI-COMPONENT SUBSTANCES

Helmut Dislich, Mainz-Gonsenheim; Paul Hinz, Mainz-Mombach, and Reinhard Kaufmann, Mainz, all of Germany, assignors to Jenaer Glaswerk Schott & Gen., Mainz, Germany

Division of Ser. No. 59,669, July 30, 1970, Pat. No. 3,759,683. This application May 2, 1973, Ser. No. 356,645

Claims priority, application Germany, Aug. 13, 1969, 1941191

Int. Cl. C03c *5/00, 5/06*

U.S. Cl. 65—33 **24 Claims**

1. Process for the production of a glassy, or crystalline multi-component oxide coating on a substrate which comprises: p1 a. dissolving in an organic solvent as a first component at least one of alkali metal compounds and alkali earth metal compounds and as a second component at least one of metal compounds of Groups IB, IIB, III, IV, V, VI, VII A or VIII of the periodic system, maintaining the solution at a temperature and for a time for reaction of said first component with said second component, and formation of a solution containing the reaction product, the proportion of the metal compounds in said organic solution corresponding to the composition of said multi-component oxide coating,

b. coating the substrate with said solution, evaporating solvent from the solvent coating in the presence of moisture, to obtain said reaction product in solid, hydrolzed form, and

c. heating said reaction product in solid, hydrolyzed form to a temperature below the melting point or melting range of said multi-component oxide to form said multi-component oxide coating.

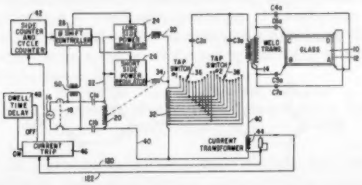
3,847,584
AUTOMATIC VARIABLE PHASE SHIFT CONTROL FOR WELDING GLASS SHEETS

Lloyd Houser, and William G. Jeffries, both of Lincoln, Ill., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed May 24, 1973, Ser. No. 363,681

Int. Cl. C03b *23/24*

U.S. Cl. 65—40 **24 Claims**



1. In a glass welding apparatus for forming multiple glazed window units, an electrical welding circuit including at least two spaced electrodes adjacent the glass to be welded and regulator means for regulating the current flow between said electrodes and thereby the heating of said glass, said welding circuit comprising:

a source of alternating current power connected through said regulator means to said electrodes;

phase shift means for varying the effective current flow through said regulator means, said phase shift means including automatic phase shift sequencer means connected to said regulator to vary said current flow through said regulator incrementally through a predetermined sequence of current levels whereby the current to said electrodes is automatically varied to heat said glass in accordance with a predetermined and repeatable heating pattern.

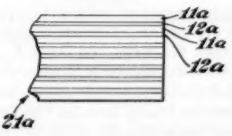
3,847,585
METHOD FOR THE PREPARATION OF MULTILAYER OPTICAL FILTERS

Douglas S. Chisholm, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 8, 1973, Ser. No. 321,792

Int. Cl. C03b *13/00, 5/26*

U.S. Cl. 65—99 A **6 Claims**



1. A method for the preparation of a multilayer optical filter, the steps of the method comprising

providing at least first and second thermoplastic transparent glass compositions,

dividing the first and second glass compositions into first and second substreams,

interdigitating the first and second substreams to provide a single composite stream,

deforming the single composite stream to alternate the shape of the substreams to provide the substreams with a plurality of interfaces, the interfaces being deposited in generally parallel planes which are parallel to a major surface of the composite stream and being separated by a distance from about 0.05 micron to about one micron, with the further limitation that the first and second glass compositions have refractive indices which differ from each other by at least about 0.05.

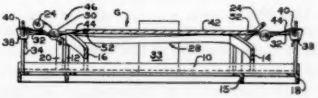
3,847,586
APPARATUS FOR BENDING GLASS SHEETS TO SHARP CURVATURES

Thomas J. Reese, Sarver; George R. Claassen, and Melvin W. Tobin, both of New Kensington, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 18, 1973, Ser. No. 425,918

Int. Cl. C03b *23/02*

U.S. Cl. 65—290 **8 Claims**



1. Apparatus for shaping a glass sheet to a shape including a line of sharp curvature extending from one side edge to the

other of said sheet comprising an outline mold of the skeleton type having an upper shaping surface conforming to the shape desired for said glass sheet after bending, a first electrode located on one side of said mold, a second electrode located on the other side of said mold, means adapted to couple said electrodes to an electrical power source, means for holding a flexible electroconductive ribbon in electroconductive relation to each of said electrodes and in fixed positions outside said mold in a vertical plane extending through said line of sharp bending for supporting said electroconductive ribbon in said vertical plane and across said mold in contact with the upper surface of a glass sheet mounted on said mold for bending, hold-down means located in said vertical plane intermediate one lateral side of said mold and said ribbon holding means to engage the upper surface of said ribbon in said vertical plane between a side of the mold and said ribbon holding means to apply a light downward force against said ribbon to hold said ribbon in contact with the upper surface of said glass sheet along the line of sharp bending as the latter sags, and means disposed in said vertical plane to engage the under surface of said ribbon inward of said position where said hold-down means engages said upper surface of said ribbon to maintain said ribbon in closely spaced relation to said glass sheet edges as the glass sheet sags along said line of sharp bending.

3,847,587

META-THIOCARBAMYL PHENYLENE AMIDES AND UREAS AS HERBICIDES

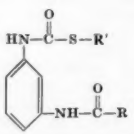
Eugene G. Teach, El Cerrito, and Duane R. Arneklev, Sunnyvale, both of Calif., assignors to Stauffer Chemical Company, New York, N.Y.

Division of Ser. No. 86,379, Nov. 2, 1970, Pat. No. 3,723,474. This application Dec. 11, 1972, Ser. No. 313,703

Int. Cl. A01n *9/00*

U.S. Cl. 71—88 **30 Claims**

1. A method for controlling the growth of vegetation which comprises applying to the locus wherein control is desired, and herbicidally effective amount of the compound of the formula



in which R′ is alkyl containing from one to six carbon atoms, inclusive, or benzyl and R is alkyl containing from one to ten carbon atoms, inclusive, mono-alkylamino, N,N-di-substituted amino wherein said substituents are independently selected from the group consisting of alkyl containing from one to six carbon atoms, inclusive, alkoxy containing from one to six carbon atoms, inclusive, furfuryl and cycloalkenyl containing from three to seven carbon atoms, inclusive.

3,847,588

THIAZOLES HERBICIDAL

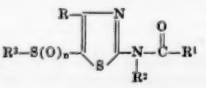
Kurt H. Pilgram, and Richard D. Skiles, both of Modesto, Calif., assignors to Shell Oil Company, New York, N.Y.

Division of Ser. No. 30,367, April 20, 1970, Pat. No. 3,717,651. This application Nov. 7, 1972, Ser. No. 304,423

Int. Cl. A01n *9/12*

U.S. Cl. 71—90 **6 Claims**

1. A herbicidal formulation comprising a herbicidally effective amount of a compound of the formula



wherein R represents hydrogen or alkyl of up to four carbon atoms, R^1 is alkyl of two to eight carbon atoms, cyclic alkyl of three to eight carbon atoms optionally substituted by phenyl or cyano, or alkenyl of two to eight carbon atoms optionally containing up to two trifluoromethyl groups; *n* is 0, 1 or 2: R^2 is hydrogen or alkyl of up to four carbon atoms; R^3 is alkyl of one to four carbon atoms or

wherein R^4 and R^5 is each hydrogen or alkyl of one to four carbon atoms, together with an adjuvant therefor.

3,847,589

METHOD OF CONTROLLING PLANT GROWTH WITH 3-SUBSTITUTED LUMAZINES

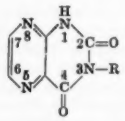
Richard L. Jacobs, Perrysburg, Ohio, assignor to The Sherwin-Williams Company, Cleveland, Ohio

Division of Ser. No. 867,873, June 26, 1968, Pat. No. 3,732,224, which is a continuation-in-part of Ser. No. 740,045, June 26, 1968, abandoned. This application Mar. 1, 1973, Ser. No. 336,968

Int. Cl. A01n *9/22*

U.S. Cl. 71—92 **5 Claims**

1. A method of controlling plant growth comprising applying to the locus to be protected an effective amount of a compound having the formula



wherein R is selected from the group consisting of alkyl groups having from two to eight carbon atoms, and cycloalkyl groups having from three to 12 carbon atoms.

3,847,590

HERBICIDAL COMPOSITIONS AND METHODS UTILIZING OXIME ETHERS

Adolf Hubele, Riehen, Switzerland, assignor to Ciba-Geigy AG, Basel, Switzerland

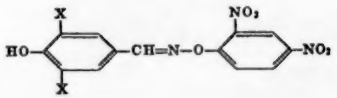
Division of Ser. No. 46,832, June 16, 1970, Pat. No. 3,733,359, which is a continuation-in-part of Ser. No. 521,413, Jan. 18, 1966, abandoned. This application Mar. 8, 1973, Ser. No. 339,251

Claims priority, application Switzerland, Jan. 22, 1965, 915 Switzerland, July 9, 1965, 9630.

Int. Cl. A01n *9/20*

U.S. Cl. 71—121 **4 Claims**

1. A composition for controlling undesired plant growth which comprises (1) as active ingredient, a herbicidically effective amount of a compound of a the formula



wherein X is chlorine, bromine or iodine, and (2) an inert carrier.

3,847,591

LEAD-ZINC FOAMS

Leonard M. Niebylski, Birmingham, and Chester P. Jarema, Detroit, both of Mich., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 155,210, June 21, 1971, Pat. No. 3,790,365, which is a continuation-in-part of Ser. No. 879,915, Nov. 24, 1969, abandoned. This application Nov. 1, 1973, Ser. No. 411,893

Int. Cl. B22d *27/00*

U.S. Cl. 75—20 F **1 Claim**

1. Process for preparing a metal foam from a lead based metal having from 1.5 to 5 weight per cent zinc, said process comprising substantially saturating a molten mass of said metal with CO_2, subsequently adding with stirring from 1.5 to 5 grams of TiH_2 per 100 gram portion of Pb while maintaining the temperature of the mass below about 410°C., subsequently raising the temperature to from about 420°C. to about 475°C. to foam said mass, and quickly cooling the foam thereby produced below its solidification temperature to form a set cellular product.

3,847,592

METHOD FOR ADDING A GRANULAR OR POWDERED REACTION COMPONENT TO A MOLTEN METAL, AS WELL AS AN IMPROVED GRANULAR OR POWDERED REACTION COMPONENT FOR CARRYING OUT A CORRECTIVE REACTION ON A MOLTEN METAL

Jan Schokkenbroek, Alkmaar, Netherlands, assignor to Koninklijke Nederlandsche Hoogovens En Staalfabrieken N. V., Ijmuiden, Netherlands

Filed Feb. 16, 1972, Ser. No. 226,757

Claims priority, application Netherlands, Feb. 25, 1971, 7102540

Int. Cl. C22b *9/12*; **C21c** *7/00*

U.S. Cl. 75—53 **10 Claims**

1. A method for treating a molten metal with a reaction component which is solid at the temperature of the molten metal comprising mixing a dry granular reaction component prior to addition of same to the melt to be treated with a minor amount of a dry and finely powdered solid material capable of reducing the tendency of the reaction component granules to cohere with one another and to form a granular reaction component mixture in which said solid material is intimately dispersed throughout said reaction component insuring that said reaction component will be in a non-agglomerated state, said finely powdered solid material having substantially no effect on the termination of the reaction of said reaction component with the molten metal, and thereafter mixing said formed reaction component mixture with the molten metal to achieve a reaction between said reaction component and the molten metal.

3,847,593

PROCESS FOR REFINING METALS, IN PARTICULAR LIQUID PIG IRON, IN OXYGEN CONVERTERS WITH CONTINUOUS CONTROL OF THE OPERATIVE PROCEDURE

Aldo Ramacciotti, Rome, and Giancarlo Eminian, Taranto, both of Italy, assignors to Centro Sperimentale Metallurgico S.P.A., Rome, Italy

Filed June 29, 1972, Ser. No. 267,694

Claims priority, application Italy, July 13, 1971, 31604/71

Int. Cl. C21c *5/30*

U.S. Cl. 75—60 **1 Claim**

1. In a process for refining liquid pig iron into steel in a liquid bath, comprising blowing a gas containing oxygen onto the bath, and analyzing the gas above the bath; the improvement comprising the steps of predetermining a desired graphical curve of m versus time on the basis of at least the actual initial and desired final physical characteristics of the bath, in which

$$m = k\,A + B/Q_O\ ,$$

A being the instantaneous flow rate of the oxygen in said analyzed gas employed for the combustion of C into CO in $Nm^3/min.$, B being the instantaneous flow rate of the oxygen in said analyzed gas used for the combustion of CO to CO_2 in $Nm^3/min.$, and Q_O being the instantaneous flow rate of the total oxygen in said blown gas in $Nm^3/min.$, k being a constant; determining at a plurality of time intervals the actual instantaneous values of m on the basis of the physical characteristics of gas emitted from the bath; and varying the flow rate of said blown gas so as to decrease the difference between each said actual value of m and the predetermined value of m at the same said time interval on said graphical curve until physical characteristics close to said desired final physical characteristics of the bath are achieved.

3,847,594

DISINTEGRATION OF SCRAP ALLOYS TO FACILITATE RECOVERY OF NICKEL, COBALT AND COPPER VALUES

Sjaak Johan Van Der Meulen; Bauke Weizenbach; Allan Henry Lee, all of Fort Saskatchewan, Alberta, and Theodore Andrew Kinjerski, Bon Acord, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Toronto, Ontario, Canada

Continuation-in-part of Ser. No. 203,834, Dec. 1, 1971, abandoned. This application Nov. 27, 1973, Ser. No. 419,328

Int. Cl. C22b *7/00*

U.S. Cl. 75—63 **5 Claims**

1. A process for causing iron-chromium scrap alloys containing a metal selected from the group consisting of nickel, cobalt and copper of larger than 65 mesh standard Tyler screen in size to disintegrate and to convert to a form from which contained values of at least one of nickel, cobalt and copper may be extracted in a subsequent leaching step said process including the steps of: contacting said scrap alloy with an additive selected from the group comprising alkali metal sulphate and alkali metal sulphite; heating the scrap alloy and the additive to a temperature below the melting point of said scrap alloy and under conditions reducing only with respect to metals whose oxides have energies of formation lower than that of iron in order to cause an exothermic reaction between the scrap alloy and additive with resulting conversion of iron and chromium values to metal oxides and/or metal sulphides; and quenching the reaction product from the preceding step to cause disintegration thereof.

3,847,595

LEAD SMELTING PROCESS

Shou Chu Liang, Spokane, Wash.; Edward Francis Godfrey Milner, Trail, British Columbia, Canada; Gerald Wesley Toop, Trail, British Columbia, Canada, and Ronald Walter Anderson, Trail, British Columbia, Canada, assignors to Cominco Ltd., Vancouver, British Columbia, Canada

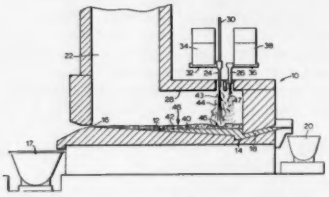
Continuation-in-part of Ser. No. 50,749, June 29, 1970, abandoned. This application May 7, 1973, Ser. No. 357,536

Int. Cl. C22b *13/00*

U.S. Cl. 75—77 **19 Claims**

1. A process for separately recovering lead values and sulphur values from a lead sulphide ore or concentrate without prior sintering which comprises: charging lead sulphide ore or concentrate in particulate form and in admixture with an oxygen-rich gas containing at least about 60 percent oxygen downwardly into and through the combustion zone of a furnace to impinge onto and penetrate the surface of a molten bath therein having lead values in the form of substantially sulphide free lead oxide-containing slag derived from said process, whereby oxidation of said lead sulphide is initiated and sustained to produce lead oxide and sulphur dioxide in a flame in said combustion zone above the area of impingement onto said molten bath and, after such impingement, oxidation

of residual lead sulphide is continued by reaction within the molten slag; supplying in the furnace sufficient oxygen gas in admixture with the ore or concentrate to provide heat of oxidation to maintain said flame at a temperature of at least 1,300°C. and said molten bath at a temperature above 1,100°C., and sufficient total oxygen to maintain at least 35



percent lead as lead oxide in the slag, said heat of oxidation being provided by reaction with said oxygen-rich gas; and withdrawing from said furnace molten material containing lead values low in sulphur content as molten lead oxide-containing slag plus any molten lead that may be formed and gaseous material containing sulphur values and entrained lead oxide fume.

3,847,596

PROCESS OF OBTAINING METALS FROM METAL HALIDES

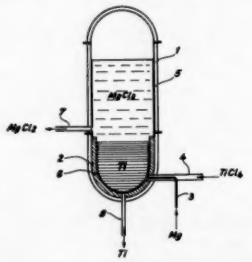
Gerhard W. Holland, and Rudolf Nowak, both of Frankfurt am Main, Germany, assignors to Halomet AG, Basel, Switzerland

Continuation of Ser. No. 801,485, Feb. 24, 1969, abandoned. This application Feb. 22, 1972, Ser. No. 228,331

Claims priority, application Germany, Feb. 28, 1968, 1583920

Int. Cl. C22b *5/00, 9/10, 53/00, 19/02*

U.S. Cl. 75—84.4 **22 Claims**



1. A process for production of a metal capable of being reduced from its halide by reduction thereof with a reducing metal, which comprises:

a. introducing into a reaction zone having a closed vapor space a reducing metal in the molten state and a halide of said metal to be produced;

b. reacting said metal halide and said reducing metal within said zone to obtain in the molten state, as reaction products in separate layers, the metal to be produced and the reducing metal halide;

c. maintaining said reaction at a temperature above the melting point of said metal to be produced and at a vapor pressure which is above one atmosphere and at least at the vapor pressure of said reducing metal halide by feeding into said reaction zone below the surface of the molten mass, additional required amounts of either of said reducing metal and said metal halide; and

d. separately removing said metal produced and said reducing metal halide from said reaction zone.

3,847,597

PROCESS FOR THE COMBINED ELIMINATION AND/OR RECONDITIONING OF CARBURIZING SALT WASTES

Wolfgang Mueller; Bernhard Rodewald, both of Mannheim, and Lothar Witzke, Bruehl, all of Germany, assignors to Th. Goldschmidt A.G., Essen, Germany

Filed Apr. 5, 1973, Ser. No. 348,045

Claims priority, application Germany, July 12, 1972, 2234171

Int. Cl. C22b *7/00*

U.S. Cl. 75—99 **13 Claims**

1. A process for the detoxication and/or reconditioning of wastes produced in the salt carburizing of steel products and which include nitrite and nitrate salts and cyanide and cyanate salts, comprising; mixing a solid fraction of a waste containing cyanide and cyanate salts with a solid fraction of a waste containing nitrite and nitrate salts in a ratio such that the nitrite and nitrate salts are present in excess of the amount necessary to oxidize the cyanide and cyanate salts, and heating said mixture to a temperature above about 150°C for a time sufficient to ignite said mixture.

3,847,598

MERCURY RECOVERY PROCESS

Michael Oliver Coulter, and David Bell, both of Holmes Chapel, near Crewe, England, assignors to BP Chemicals Limited, London, England

Continuation of Ser. No. 212,788, Dec. 27, 1971, abandoned. This application Sept. 20, 1973, Ser. No. 399,057

Claims priority, application Great Britain, Dec. 31, 1970, 61948/70

Int. Cl. C22b *43/00*

U.S. Cl. 75—121 **9 Claims**

1. A process for recovering mercury from aqueous alkaline solutions containing mercury in the form of a soluble inorganic compound which process comprises passing a stream of inert gas through said aqueous alkaline solution at a temperature in the range of 5° to 100°C in the presence of a reducing agent active for the chemical reduction of said inorganic mercury compounds to elemental mercury selected from the group consisting of ferrous sulphate, hydrazine, hydroxylamine, D-glucose, and sodium borohydride, and subsequently recovering the mercury vapor from the inert gas.

3,847,599

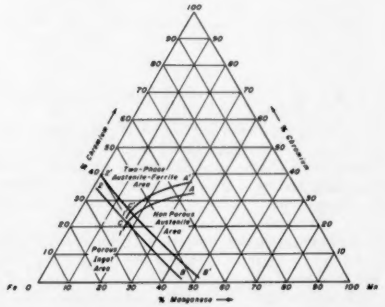
CORROSION RESISTANT AUSTENITIC STEEL

Albert G., Hartline, III: Brackenridge, Pa., assignor to Allegheny Ludlum Industries, Inc., Pittsburgh, Pa.

Filed Oct. 4, 1973, Ser. No. 403,347

Int. Cl. C22c *39/14, 33/00*

U.S. Cl. 75—122 **8 Claims**



1. An alloy consisting essentially of about 21–45 percent manganese, about 10–30 percent chromium, about 1–5 per-

cent molybdenum, about 0.85–3 percent nitrogen, up to 1 percent carbon, up to 2 percent silicon and the balance iron and residuals wherein the composition is such that:

1. %Cr + %Mo + 0.8(%Mn) − 11.8(%N − 0.1) 28.5
2. 30(%C + %N) + 0.5(%Mn)/%Cr+ %Mo+ 1.5(%Si) 1.5

3,847,600

HIGH TEMPERATURE ALLOY STEEL

Tohru Mimino; Kazuhisa Kinoshita, and Keisuke Hattori, all of Kawasaki, Japan, assignors to Nippon Kokan Kabushiki Kaisha, Kawasaki-shi, Kanagawa-ken, Japan

Continuation of Ser. No. 63,623, Aug. 13, 1970, abandoned. This application May 9, 1973, Ser. No. 358,797

Claims priority, application Japan, Aug. 8, 1969, 44-67174

Int. Cl. C22c *39/14, 39/26*

U.S. Cl. 75—126 C **6 Claims**

1. A high temperature alloy steel having high creep rupture strength up to temperatures of about 650° consisting essentially of the following elements in the following weight percentages:

carbon	less than 0.10%
silicon	less than 1.0%
manganese	0.30 – 1.20%
chromium	7 – 10%
molybdenum	0.3 – 1.5%
vanadium	0.1 – 0.3%
niobium	0.15 – 0.50%
boron	up to 0.012%
nitrogen	up to 0.05%

the balance being iron and incidental impurities.

5. A high temperature alloy steel consisting essentially of the following elements in the following weight percentages.

carbon	0.04 – 0.06%
silicon	0.45 – 0.60%
manganese	0.50 – 0.75%
chromium	7.75 – 8.50%
molybdenum	0.9 – 1.00%
vanadium	0.15 – 0.25%
niobium	0.30 – 0.35%
boron	0.007 – 0.008%
nitrogen	0.011 – 0.030%

the balance being iron and incidental impurities.

3,847,601

REDUCED PELLETS FOR MAKING ALLOYS CONTAINING NICKEL AND CHROMIUM

Yohnosuke Itoh, Tokyo; Kozo Yokota, Yokohama; Tetsuya Watanabe, Fujisawa, and Rokuro Matsui, Kawasaki, all of Japan, assignors to Nippon Yakin Kogyo Company Limited, Tokyo, Japan

Filed May 24, 1973, Ser. No. 363,619

Claims priority, application Japan, May 29, 1972, 47-52527

Int. Cl. C22c *33/00;* **C21b** *1/08*

U.S. Cl. 75—130.5 **7 Claims**

1. Reduced pellets for making alloys containing nickel and chromium, consisting essentially of a mixture of 1 part by weight of chrome iron ore, 1 to 10 parts by weight of nickel silicate ore, and at least one reducing agent containing 1.05 to 1.30 gram-atom of carbon per 1 gram-atom of total oxygen which is combined with iron, nickel, chromium and cobalt of the chrome iron ore plus the nickel silicate ore, said mixture having been fired at a temperature of 900°C to 1,400°C to effect reduction and sintering of said ores to bind together said ingredients of the pellets mostly by slag bondage.

3,847,602

COPPER-BASE ALLOY FOR HIGH PRECISION RESISTORS

Boris Vladimirovich Blinov, ulitsa Frunze 4 kv.5, and Vasily Valentinovich Kukhar, 2 Murinsky proezd 15 kv. 34, both of Leningrad, U.S.S.R.

Continuation-in-part of Ser. No. 77,014, Sept. 30, 1970, abandoned. This application Sept. 20, 1973, Ser. No. 399,119

Int. Cl. C22c *9/00, 9/06;* **H01c** *13/00*

U.S. Cl. 75—161 **8 Claims**

1. An alloy especially useful as material for precision resistors, said alloy consisting essentially of between about 8% and about 14% of manganese, between about 6% and about 10% of gallium, and the remainder being copper.

3,847,603

PROCESS FOR PREPARING A SINTERED IRON NEGATIVE PLATE FOR AN ALKALINE STORAGE BATTERY

Masataro Fukuda; Tsutomu Iwaki, and Tadayasu Mitsumata, all of Osaka, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

Filed Dec. 19, 1972, Ser. No. 316,543

Claims priority, application Japan, Apr. 3, 1972, 47-32642; Dec. 28, 1971, 46-105736; Dec. 21, 1971, 46-103204

Int. Cl. B22f *1/00, 3/16, 5/00*

U.S. Cl. 75—213 **10 Claims**

1. A method of preparing an iron negative plate for an alkaline storage battery, comprising the steps of:

heating needle-shaped particles of an oxygen-containing iron compound selected from the group consisting of iron (III) oxyhydroxide and γ-type ferric oxide at a temperature range between 700°C and 850°C in hydrogen atmosphere to obtain a sintered body;

pulverizing said sintered body into finely divided particles;

tamping said finely divided particles into a mould of desired shape; and

sintering said tamped body at a temperature range between 700°C and 1050°C in hydrogen atmosphere.

ERRATUM

For Class 93—1 see:
Patent No. 3,847,606

3,847,604

ELECTROSTATIC IMAGING PROCESS USING NODULAR CARRIERS

Robert J. Hagenbach, Rochester, and Myron J. Lenhard, Penfield, both of N.Y., assignors to Xerox Corporation, Rochester, N.Y.

Division of Ser. No. 151,995, June 10, 1971, Pat. No. 3,767,598. This application May 7, 1973, Ser. No. 357,988

Int. Cl. G03g *9/02, 13/08*

U.S. Cl. 96—1 SD **12 Claims**

1. An electrostatographic imaging process comprising the steps of forming an electrostatographic latent image on a photoconductive surface and developing said electrostatographic latent image by contacting said photoconductive surface with an electrostatographic developer mixture comprising nodular carrier beads each having a generally spherical shape and a surface characterized by a plurality of small generally rounded nodular particles separated by recesses, said beads having an average size distribution in the range of 50 to 1,000 microns, and between about 95 and at least about 99.5 weight percent, based on the weight of the developer mixture, of said carrier beads relative to said finely divided toner particles electrostatically clinging to said surface of said carrier beads, whereby at least a portion of said finely divided toner particles are attracted to and held on said surface in conformance to said electrostatographic latent image.

3,847,605

PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY

Eiichi Kondo, and Tetsuo Hasegawa, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1971, Ser. No. 121,187
Claims priority, application Japan, Mar. 9, 1970, 45-20237
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **1 Claim**

1. An organic photoconductive material which comprises 100 parts by weight of a chlorine substituted poly-9-vinylcarbazole containing from about 2–43 percent by weight of chlorine and 10–50 parts by weight of a liquid cumarone resin having an average molecular weight of about 200–300.

3,847,606

PROTECTING PHOTOCONDUCTOR SURFACES

Leon J. Schwartz, Monsey, N.Y.; Gerald M. Spiegel, Jr., Bridgeport, and Leon N. Hecht, Jr., Stamford, both of Conn., assignors to Pitney-Bowes, Inc., Stamford, Conn.

Filed Mar. 8, 1973, Ser. No. 339,084
Int. Cl. G03g *5/04*
U.S. Cl. 96—1.5 **8 Claims**

1. A photoconductive insulating composition comprising a layer of photoconductive insulating material having a mixture of cadmium sulfoselenide and photoconductive zinc oxide for electrostatic imaging and a thin, uniform top coating of polyurethane having a thickness from 0.02 to 0.1 mil closely bonded to and substantially over the entire surface of said photoconductive insulating material.

3,847,607

ORGANIC PHOTOCONDUCTORS SENSITIZED BY FREE RADICAL LIBERATORS AND ORGANIMETALLIC COMPOUNDS

Ichiro Endo, Tokyo, and Teruo Yamanouchi, Fujisawa, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 111,626, Feb. 1, 1971, Pat. No. 3,765,883. This application May 3, 1973, Ser. No. 356,805
Int. Cl. G03g *5/06*
U.S. Cl. 96—1.6 **40 Claims**

1. An electrophotographic photosensitive member which comprises a support having coated thereon a sensitized layer of photoconductive photosensitive material, said material comprising an organic photoconductive material, a free radical former capable of producing free radicals for sensitizing said organic photoconductive material when uniformly excited by radiation energy and an organometallic compound incapable of liberating free radicals under the exposure used to excite said free radical former, but capable of catalyzing the sensitizing ability of the radical former, said photoconductive photosensitive material having been sensitized by applying said radiation energy uniformly to at least said free radical former and said organometallic compound.

3,847,608

PHOTODECORATING SHEET MATERIAL WITH MATCHED COLORED DESIGNS

Rolf Dessauer, Greenville, Del., and John R. Ellefson, West Chester, Pa., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

Filed Aug. 8, 1972, Ser. No. 278,778
Int. Cl. G03c *5/04*, *5/00*
U.S. Cl. 96—27 R **21 Claims**

1. In a process for color decorating sheet material with a design by coating the sheet material with a photosensitive composition capable of generating color subsequent to exposure to activating light, exposing the coated sheet material to activating light, and color stabilizing the resulting design by fixing the coating, the sheet material to be used to form an article by assemblying multiple pieces of the designed sheet material, whereby the pieces are cut from the sheet material in closely-spaced arrangement, the improvement wherein the material is exposed to activating light through a light modulating means which registers at least a portion of the design on a piece cut from the sheet material so as to match with at least one second piece cut from the sheet material with minimum waste.

3,847,609

PHOTOPOLYMER PROCESS FORMING GRAFT POLYMERS IN EXPOSED AREAS

David W. Breslow, and David A. Simpson, both of Wilmington, Del., assignors to Hercules Incorporated, Wilmington, Del.

Filed Nov. 9, 1972, Ser. No. 305,209
Int. Cl. G03f *7/02*
U.S. Cl. 96—33 **26 Claims**

1. The process of making a photographic image which comprises providing the surface of a polymer film with a photo-oxygenation sensitizer, said film being a film of a polymer containing extralinear olefinic unsaturation of the type in which there is no more than one hydrogen atom on each of the double bond carbons and in which there is at least one allylic hydrogen on at least one of the carbons adjacent to the double bond carbons, exposing selected areas of the sensitized film to light having a wave length of from about 2000 to about 12,000 angstroms in the presence of oxygen, and subjecting the exposed film to contact with a reactant capable of forming a graft polymer structure in the exposed areas of the film.

3,847,610

PHOTOPOLYMERISATION OF ETHYLENICALLY UNSATURATED ORGANIC COMPOUNDS

Urbain Leopold Laridon, Wilrijk; Gerard Albert Delzenne, S-Gravenwezel, and Hugo Karel Peeters, Berchem, all of Belgium, assignors to Gevaert-Agfa, N.V., Mortsel, Belgium

Filed Oct. 9, 1969, Ser. No. 865,191
Claims priority, application Great Britain, Nov. 26, 1968, 56094/68
Int. Cl. G03c *1/70*, *1/52*
U.S. Cl. 96—35.1 **14 Claims**

1. A process for the photopolymerisation of ethylenically unsaturated organic compounds, which comprises irradiating with actinic light a composition comprising a photopolymerisable ethylenically unsaturated organic compound and as a photopolymerisation initiator a compound containing at least one diazosulphone group, said compound corresponding to one of the formulae:

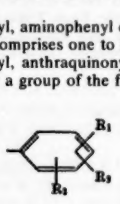
$$X-SO_2-N=N-Y \text{ and}$$
$$X'-SO_2-N=N-Z-N=N-SO_2-X'$$

wherein:

X represents phenyl, naphthyl, or phenyl substituted in ortho, meta or paraposition with respect to the sulphonyl group by alkyl of one to four carbon atoms, carboxyl, amino, dialkylamino wherein the alkyl groups comprise one to four carbon atoms, acylamino wherein the acyl group comprises two to seven carbon atoms, phenylazo or nitrophenylazo;

X′ represents phenyl, aminophenyl or alkylphenyl wherein the alkyl group comprises one to four carbon atoms;

Y represents pyridyl, anthraquinonyl, naphthyl, acridinyl, benzothiazolyl or a group of the formula



wherein:

R_1 represents hydrogen, alkyl of one to four carbon atoms, nitro, alkoxy, of one to four carbon atoms, carboxyl, or sodium sulphonyl, or NR′R″ wherein R′ is hydrogen, alkyl of one to four carbon atoms, phenyl, acyl wherein the acyl group comprises two to seven carbon atoms, p-

methoxybenzoyl, p-nitrophenyl, naphthyl, acryloyl, methacryloyl, or dialkylaminophenylcarbamoyl with alkyl groups of one to four carbon atoms; R'' is hydrogen, alkyl of one to four carbon atoms, or phenyl;

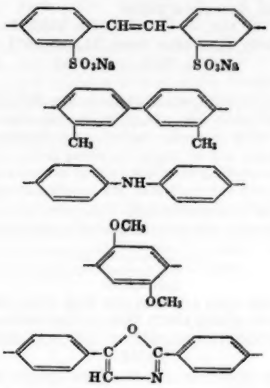
R_2 represents hydrogen, halogen, alkoxy with one or two carbon atoms, alkyl of one or two carbon atoms, or nitro;

R_3 represents hydrogen, halogen, alkoxy with one or two carbon atoms, or alkyl of one or two carbon atoms;

R_1, R_2 and R_3 standing in ortho, meta or paraposition with respect of the diimide group;

and

Z represents a radical of the formulae:



3,847,611

PHOTOGRAPHIC PROCESS FOR FORMING A POSITIVE COLOR IMAGE UTILIZING A PHOTOCHROMIC COMPOSITION CONTAINING A SPIROPYRAN COMPOUND, A PHOTOACTIVATOR AND POLY-N-VINYL- CARBAZOLE

Freddy Ghisleen Van Royen, Wommelgem, and Jozef Willy Van Den Houte, Berchem, both of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed Feb. 21, 1973, Ser. No. 334,246

Claims priority, application Great Britain, June 26, 1972, 29917/72

Int. Cl. G03c 5/24, 1/52

U.S. Cl. 96—48 R **13 Claims**

1. A photographic process for producing a positive color image in a recording material which comprises in intimate admixture:

1. at least one spiropyran compound which is a spirobenzopyran, a spirodinaphthopyran, a spirobenzonaphthopyran, a 1,3,3-trimethylindolinobenzospiropyran, a 1,3,3-trimethylindolinonaphtospiran or a spiropyran containing a condensed anthracene or phenanthrene nucleus; and
2. at least one organic polyhalogen compound that is sensitive to ultraviolet radiation and corresponds to the general formula:

in which:

each of A, B, X and Y is a chlorine, bromine or iodine atom, or

one of A, B, X or Y represents an alkyl group, an aryl group, or an aroyl group, and the remainder chlorine, bromine or iodine, or at least two of A, B, X or Y represent an aromatic acyl group, and the remainder chlorine, bromine or iodine; and

3. within said recording material in working contact with said mixture a polymer of N-vinylcarbazole,

which comprises the steps of:

imagewise exposing said recording material to activating electromagnetic radiation to an extent forming a latent dye image or faintly colored visible dye image,

overall heating the imagewise exposed recording material to such an extent that upon subsequent overall exposure of the heated recording material to infrared radiation optionally mixed with white light a positive color image is formed, and

overall exposing the thus overall heated recording material with infrared radiation optionally mixed with white light producing thereby a positive color image.

3,847,612

LIGHT-SENSITIVE HEAT-DEVELOPABLE SHEET MATERIAL

John M. Winslow, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Feb. 2, 1973, Ser. No. 329,107

Int. Cl. G03c 1/02

U.S. Cl. 96—67 **6 Claims**

1. A photosensitive heat-developable sheet material having an image-forming stratum comprising (1) photo-sensitive silver halide catalyst-forming means and (2) heat-sensitive reactant image-forming means including an organic silver salt oxidizing agent and a hindered phenolic reducing agent for silver ion, the oxidation-reduction reaction of which to produce a visible change is accelerated by said catalyst, and (3) as image intensifier material, a mixture of (a) one or more of the compounds phthalic acid, naphthalene-2,3-dicarboxylic acid, or phthalamic acid, and (b) an imidazole.

3,847,613

SILVER HALIDE PHOTOSENSITIVE MATERIALS FOR COLOR PHOTOGRAPHY

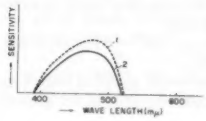
Kaiichiro Sakazume, Tokyo; Eiichi Sakamoto, Hanno; Kiyomitsu Mine, Tokyo; Noboru Fujimori, Tokyo, and Shigemasa Ito, Tokyo, Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

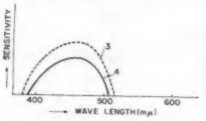
Filed Jan. 22, 1973, Ser. No. 325,338

Claims priority, application Japan, Jan. 24, 1972, 47-8300

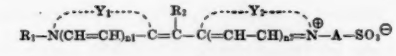
Int. Cl. G03c 7/32, 1/16

U.S. Cl. 96—74 **5 Claims**





1. A silver halide photosensitive material for color photography comprising a support and at least three emulsion layers supported thereon; said layers being a red-sensitive emulsion layer, a green-sensitive emulsion layer, and a blue-sensitive emulsion layer: the blue-sensitive emulsion layer containing a sensitizing dye represented by the following formula:



Wherein Y_1 and Y_2 each stand for a non-metallic atomic group necessary to form a nitrogen-containing heterocyclic ring nucleus selected from the group consisting of pyrroline, thiazoline, thiazole, benzothiazol, naphthothiazole, selenazole, benzoselenazole, naphthoselenazole, oxazole, benzoxazole, naphthoxozole, imidazole, benzimidazole, pyridine, and quinoline, which nucleus may be substituted by a halogen atom, a lower alkyl group, a lower alkoxy group, or an aryl group, which group may in turn be substituted by halogen, lower alkyl or lower alkoxy; R_1 stands for lower alkyl, hydroxyalkyl, or sulfoalkyl; R_2 is hydrogen or lower alkyl, A designates alkylene,

$-(CH_2)_2-O-(CH_2)_2-$ or $-(CH_2)_2-O-CH_2CH(OH)CH_2-$; and n_1 and n_2 are each 0 or 1.

3,847,614

DIAZO PHOTOPOLYMER COMPOSITION AND ARTICLE COMPRISING CARBOXYLATED RESIN

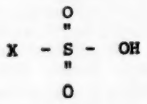
John A. Mattor, Bar Mills, Maine, assignor to Scott Paper Company, Delaware County, Pa.

Continuation-in-part of Ser. No. 180,200, Sept. 13, 1971,. This application Mar. 14, 1973, Ser. No. 341,272

Int. Cl. G03f *7/08*; G03c *1/60*

U.S. Cl. 96—75 **15 Claims**

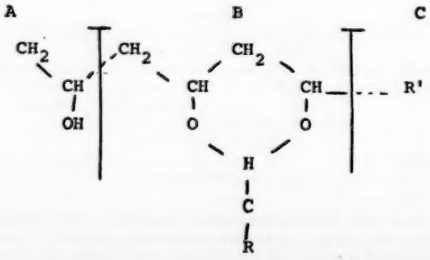
1. A photopolymer composition comprising a mixture of a solvent soluble, negative-working diazo compound and a cyclic acetal of poly (vinyl alcohol) wherein the diazo compound is the product formed by reacting in an aqueous medium an anionic surfactant or salt thereof and the condensation product of a diphenylamine-4-diazonium salt with formaldehyde, the surfactant corresponding to the formula



wherein X— is R— or RO— and R is alkyl of more than three carbon atoms, alkyl of more than three carbon atoms interrupted by one or more oxyalkylene groups or alkyl of more than three carbon atoms substituted by phenyl, naphthyl, alkylphenyl, alkylnaphthyl, or alkylphenyl or alkylnaphthyl interrupted by one or more oxyalkylene groups,

or X— is Ar— or ArO— wherein Ar is a phenyl or a naphthyl moiety

and the resinous cyclic acetal of poly(vinyl alcohol) consists essentially of repeating units of the general formula



where R is, in more than half of the groups labelled B, an aromatic moiety taken from the group consisting of benzene and naphthalene, R′ is a carboxyl-containing copolymerizable unit derived from an unsaturated mono-or dicarboxylic acid and the polymer consists of 17 to 65 mole percent of the group labelled A, from greater than zero up to 16 mole percent of the group labelled C and the remainder being the group labelled B.

3,847,615

IMAGE-RECEIVING MATERIAL FOR COLOR DIFFUSION TRANSFER PROCESS

Takashi Yoshida; Shinji Sakaguchi, and Takushi Miyazako, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Ashigara-shi, Kanagawa, Japan

Filed Mar. 7, 1973, Ser. No. 338,715

Claims priority, application Japan, Mar. 7, 1972, 47-23466

Int. Cl. G03c *1/40*, *7/00*

U.S. Cl. 96—77 **14 Claims**

1. An image-receiving material for a color diffusion transfer process which comprises a support having thereon, in sequence, an acid polymer layer, a neutralization rate-controlling layer, and an image receiving layer, said neutralization rate-controlling layer comprising at least one polymer selected from the homopolymer, the copolymer and the graft polymer of the monomethacrylic acid ester of a polyhydric alcohol or the monoacrylic acid ester of a polyhydric alcohol.

3,847,616

PROCESS AND APPARATUS FOR GELLING A SOL-FORM SUBSTANCE FOR A PHOTOGRAPHIC LIGHT-SENSITIVE ELEMENT AND FOR MELTING SAME

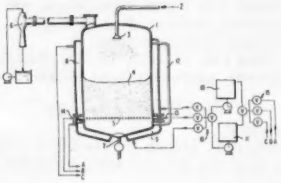
Shiro Kaneko; Sakae Masuda; Motohiro Ujihara, and Yosuke Uchida, all of Minami Ashigara-machi, Japan, assignors to Fuji Photo Film Co., Ltd., Minami Ashigara-shi, Kanagawa, Japan

Filed Feb. 8, 1972, Ser. No. 224,438

Claims priority, application Japan, Feb. 8, 1971, 46-5060

Int. Cl. G03c *1/02*; B01d *1/04*

U.S. Cl. 96—94 R **8 Claims**



1. A process for producing a gel-form of a photographic silver halide emulsion from a sol-form of said emulsion and for melting said gel-form of said emulsion which comprises the steps of:

a. providing a hurdle-shaped or net-like heat transmitting device capable of supporting said gel-form of said emulsion at the lower portion of a closed vessel;

b. supplying a cooling medium to said heat transmitting device;

c. reducing the pressure in said vessel to at least the vapor pressure of water at the temperature at which said sol-form of said emulsion is to be cooled to form said gel-form of said emulsion;

d. feeding in droplet form said sol-form of said emulsion into said closed vessel thereby to cool and gel said sol-form of said emulsion so as to accumulate on and be supported by said heat transmitting device; and thereafter,

e. supplying a heating medium to said heat transmitting device, the temperature and quantity of said heating medium being adjusted so as to obtain a required melting temperature and melting rate of said gel-form of said emulsion, thereby causing said gel-form of said emulsion to melt and flow downwardly through said heat transmitting device, and

f. taking out said melted gel-form of said emulsion from the bottom portion of said closed vessel.

3,847,617

PROCESS OF PREPARING FINE-GRAIN SILVERHALIDE EMULSIONS

Herman A. Philippaerts, Edegem; Robert Joseph Pollet, Vremde, both of Belgium; Wolfgang Muller-Bardorff, Cologne, Germany; Wilhelm Saleck, Schildgen/Bergisch-Gladbach, Germany; Franz Moll, Leverkusen-Steinbuchel, Germany, and Theofiel Hubert Ghys, Kontich, Belgium, assignors to AG-AF-Gevaert, Mortsel, Belgium

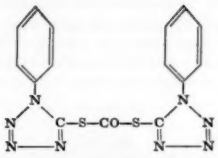
Filed Dec. 1, 1972, Ser. No. 311,161

Claims priority, application Germany, Dec. 9, 1971, 2161044

Int. Cl. G03c *1/02*

U.S. Cl. 96—94 R **5 Claims**

1. Method of preparing a photographic fine-grain silver halide emulsion which comprises the step of precipitating the silver halide in an aqueous hydrophilic colloid medium in the presence of a compound having the formula:



3,847,618

DEVELOPMENT OF PHOTOGRAPHIC SILVER HALIDE MATERIAL

Emiel Alexander Hofman, Mortsel; Leo Pierre De Bie, Kontich, and Jules Robert Berendsen, Deurne, all of Belgium, assignors to AGFA-Gevaert, Mortsel, Belgium

Filed May 18, 1973, Ser. No. 361,576

Claims priority, application Great Britain, May 26, 1972, 25068/72

Int. Cl. G03c *1/06, 5/30*

U.S. Cl. 96—95 **23 Claims**

1. Method of producing high-contrast images by exposure and development of a photographic lith-type silver halide material comprising a support and a silver halide emulsion layer containing at least about 50 mole percent of silver chloride, at least about 5 mole percent of silver bromide and from 0 to about 5 mole percent of silver iodide, wherein the said photographic lith-type material incorporates hydroquinone as developing agent, and development is effected by treatment of the exposed material with an alkaline development activator in the presence of hydroxylamine or a salt thereof or of a N-monosubstituted hydroxylamine or a salt thereof.

3,847,619

ION-PAIRED COBALTIC COMPLEXES AND PHOTOGRAPHIC ELEMENTS CONTAINING SAME

Vernon Leon Bissonette, Brockport; Rowland George Mowrey, and Richard Calvin Sutton, both of Rochester, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 20, 1972, Ser. No. 307,894

Int. Cl. G03c *1/28*

U.S. Cl. 96—108 **35 Claims**

29. A silver halide emulsion comprising a water-insoluble ion pair of a cobalt(III) ion complex ion-paired with an anionic organic acid which has an equivalent weight based on acid groups of at least 70 and less than 800.

3,847,620

METHOD FOR PRODUCING SILVER HALIDE PHOTOGRAPHIC PHOTOSENSITIVE EMULSION

Shigeru Iguchi; Tetsuo Yano, and Tamotu Iwata, all of Kyoto, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

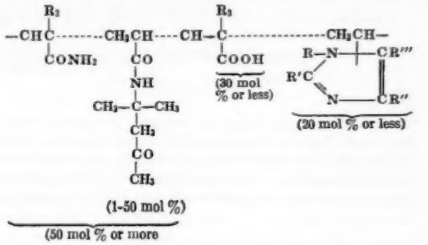
Filed Nov. 14, 1972, Ser. No. 306,382

Claims priority, application Japan, Nov. 15, 1971, 46-91337

Int. Cl. G03c *1/72*

U.S. Cl. 96—114 **3 Claims**

1. In a method for preparing photographic light sensitive silver halide emulsions, the improvement in said method of using in place of gelatin a water soluble synthetic resin of the structure consisting essentially of



where:

R_2 is H or methyl;

R_3 is H or methyl where one of R, R′, R″ and R‴ is replaced by the bond attached to the

group and the remainder of R, R′, R″ and R‴ are hydrogen, alkyl or hydroxylalkyl.

3,847,621

LASER-SENSITIVE SILVER HALIDE PHOTOSENSITIVE MATERIAL

Yoshio Nishina; Isao Kono; Toshio Kamakura; Hayashi Nakamura; Noboru Fujimori, all of Tokyo, and Eiichi Sakamoto, Hanno, all of Japan, assignors to Konishiroku Photo Industry Co. Ltd., Tokyo, Japan

Filed Nov. 27, 1972, Ser. No. 309,715

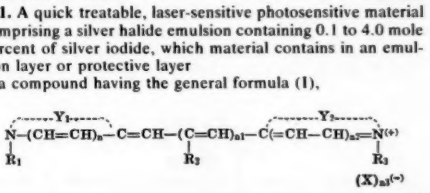
Claims priority, application Japan, Nov. 29, 1971, 46-99195

Int. Cl. G03c *1/14*

U.S. Cl. 96—126 **5 Claims**

1. A quick treatable, laser-sensitive photosensitive material comprising a silver halide emulsion containing 0.1 to 4.0 mole percent of silver iodide, which material contains in an emulsion layer or protective layer

a compound having the general formula (I),

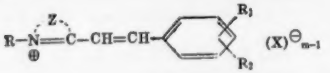


(I)

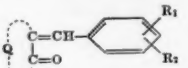
wherein Y_1 and Y_2 are individually a non-metallic atomic group necessary to form a nitrogen-containing heterocyclic ring of benzothiazole, benzoselenazole, naphthothiazole, naphthoselenazole, or quinoline which heterocyclic ring may have been substituted with a halogen atom, or a lower alkyl or

lower alkoxyl group; R_1 and R_3 are individually a lower alkyl, carboxyalkyl, sulfoalkyl, hydroxyethyl, benzyl or sulfopropylthioethyl group; R_2 is hydorgen or a lower alkyl group; X is an anion; n, and n_2 are individually 0 or 1; n_1 is 1; and n_3 is 0 or 1 and 0 in case an intramolecular salt is formed; and

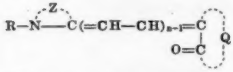
at least one compound having the general formula (II) to (VIII),



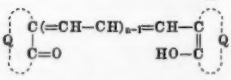
(II)



(III)

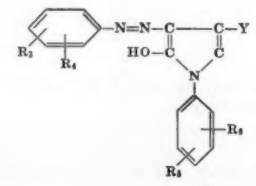


(IV)

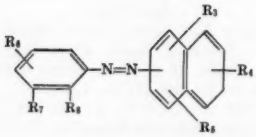


(V)

wherein Z is an atom or group necessary to form a heterocyclic ring of thiazole, benzothiazole, naphthothiazole, oxazole, benzoxazole, naphthoxazole, selenazole, benzoselenazole, naphthoselenazole, 3,3-dialkylindolenine, benzimidazole, thiazoline, pyridine, or quinoline; Q is an atom or group necessary to form a heterocyclic ring of pyrazolone, barbituric acid, thiobarbituric acid, isoxazolone, 3-hydroxythionaphthene or 1,3-indandione; R is a lower alkyl, carboxyethyl, sulfobenzyl, or sulfophenylethyl group; R_1 and R_2 are individually hydrogen or chlorine, or an alkyl, alkoxy, amino, acylamino, alkylamino, dialkylamino or sulfonic group; X is an acid anion; m is 1 or 2; and n is 1,2 or 3;

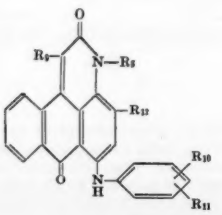


(VI)



(VII)

wherein Y is hydrogen, or an alkyl, amino, acylamino or carboxyl group; and R_3, R_4, R_5, R_6, R_7 and R_8 are individually hydrogen or chlorine, or a hydroxy, alkoxy, alkyl, amino, acylamino, alkylamino, sulfonic or carboxyl group, provided that R_7 and R_8 may form a benzene ring, and



(VIII)

wherein R_8 is hydrogen or an alkyl group; R_9 is hydrogen, or an acyl or alkoxycarboxyl group; and R_{10}, R_{11}, and R_{12} are individually hydrogen, or an alkyl or sulfonic group.

3,847,622

POLISH

Eugene H. Brandl, Weehawken, and Neil M. McHugh, Bridgewater, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Filed May 29, 1973, Ser. No. 364,368

Int. Cl. C08h *9/08*

U.S. Cl. 106—10 **22 Claims**

1. A process for the preparation of a stable water in oil emulsion useful for treating hard surfaces which comprises adding to, whereby intimately contact, an organic solvent composition comprising:

A. from about 0 to 9 percent of organopolysiloxane having a viscosity at 25°C of from about 20 to 15,000 cs,

B. from about 15 to 35 percent of organic solvent having an aniline point of from about −22° to 185°F and a distillation range of from about 190° to 460°F, said solvent being substantially miscible with said organopolysiloxane,

C. an effective amount of a water in oil emulsifier,

D. from about 0.1 to 3 percent of wax, said wax having been added to said solvent (B) in solid, non-molten form each of (A), (C) and (D) being uniformly dispersed through solvent (B),

from about 50 to 84 percent of water in the liquid or frozen state, said liquid water having a temperature no higher than about 105°F, and thereafter adding from about 0 to 9 percent of organopolysiloxane having a viscosity at 25°C of from abut 20 to 15,000 cs, so that the total amount of said polysiloxane presen in the composition ranges from about 0.05 to 9 percent.

3,847,623

OIL FOR USE IN PRINTING INKS

Ivor W. Mills, Media; Glenn R. Dimeler; William A. Atkinson, Jr., both of West Chester, all of Pa., and James P. Hoffman, Yabucoa, P.R., assignors to Sun Oil Company of Pennsylvania, Philadelphia, Pa.

Continuation-in-part of Ser. No. 850,778, Aug. 18, 1969, Pat. No. 3,654,127. This application June 21, 1972, Ser. No. 240,810

Int. Cl. C09d *11/00*

U.S. Cl. 106—32 **11 Claims**

1. A hydrogenated petroleum oil, useful as an ink oil, which contains from 30–65 weight % of gel aromatics, has a viscosity in the range of 8100–12,000 SUS at 100°F. and which by Engler distillation has a 5% point of at least 825°F., a 50 % point of at least 925°F. and a 90% point of at least 975°F., said oil having an ASTM D-1500 initial color no greater than 2.5, an ASTM D-92 flash point of at least 500°F and a viscosity-gravity constant in the range of 0.84–0.92.

3,847,624

FLUOROPHOSPHATE OPTICAL GLASS

Heinz Broemer, Hermannstein, and Norbert Meinert, Wetzlar, both of Germany, assignors to Ernst Leitz GmbH, Wetzlar, Germany

Filed June 4, 1973, Ser. No. 366,292

Claims priority, application Germany, June 26, 1972, 2231238

Int. Cl. C03c *3/18, 3/00*

U.S. Cl. 106—47 Q **5 Claims**

1. A fluorophosphate glass produced by melting a mixture of glass components consisting of

a. 2.7 mol percent of an alkali metal metaphosphate;

b. 6.5 mol percent of alkaline earth metal metaphosphates composed of

4.4 mol percent of magnesium metaphosphate,
1.0 mol percent of calcium metaphosphate, and
1.1 mol percent of barium metaphosphate;
c. 4.0 mol percent of aluminum metaphosphate;
d. 8.2 mol percent of an alkali metal hydrogen fluoride;
e. 51.8 mol percent of alkaline earth metal fluorides composed of
9.9 mol percent of magnesium fluoride,
23.8 mol percent of calcium fluoride,
8.7 mol percent of strontium fluoride, and
9.4 mol percent of barium fluoride; and
f. 26.8 mol percent of aluminum fluoride.

3,847,625

LEAD FREE GLASS COMPOSITION

Cyril Francis Drake, Harlow, and Robert Walter James Amos, New Barnet, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 14, 1972, Ser. No. 280,398
Int. Cl. C03c *3/00*
U.S. Cl. 106—52 **3 Claims**

1. A lead-free glass composition of the type containing silicon, manganese, and a quantity of alkali metal and wherein the surface is rendered electrically conductive by oxidation, the composition comprising in combination:

40 — 67 mole percent SiO_2;
12 — 27 mole percent MnO;
5 — 20 mole percent $Na_2O + K_2O$;
5 — 20 mole percent CaO + MgO; and
0 — 3 mole percent Al_2O_3,

the composition containing not more than 40 mole percent in aggregate of oxides of manganese, calcium, and magnesium.

3,847,626

GLASS COMPOSITIONS, FIBERS AND METHODS OF MAKING SAME

Thomas D. Erickson, Newark, and Warren W. Wolf, Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 298,702, Oct. 18, 1972,. This application Mar. 19, 1973, Ser. No. 340,985
Int. Cl. C03c *13/00*
U.S. Cl. 106—50 **6 Claims**

1. A boron and fluorine free fiberizable glass, consisting essentially of, by weight, 54.5 to 60 percent SiO_2, 9 to 14.5 percent Al_2O_3, 17 to 24 percent CaO, 3 to 5 percent TiO_2 and 1.5 to 4.5 percent MgO and having a liquidus temperature of about 2,200°F. or less and having a viscosity of log 2.5 poises at 2,450°F. or less.

3,847,627

GLASS COMPOSITIONS, FIBERS AND METHODS OF MAKING SAME

Thomas D. Erickson, Newark, and Warren W. Wolf, Reynoldsburg, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 298,702, Oct. 18, 1972,. This application Mar. 19, 1973, Ser. No. 340,982
Int. Cl. C03c *13/00*
U.S. Cl. 106—50 **8 Claims**

1. A boron and fluorine free fiberizable glass composition having a liquidus temperature of 2,200° F. or less and having a viscosity of log 2.5 poises at 2,450° F. or less and having less than the equivalent of 1 weight percent, total, of Na_2O, K_2O and Li_2O, calculated as Na_2O, consisting essentially by weight of 54.5 to 60% SiO_2, 9 to 14.5% Al_2O_3, 17 to 24% CaO, 2 to 3.5% TiO_2, 1.5 to 4% MgO and 1 to 6% RO, wherein R is selected from the group consisting of Zn, Sr and Ba, and the amount of RO is calculated as ZnO.

3,847,628

METAL-TO-GLASS JOINT

Otar Egorovich Modebadze, ulitsa Merkviladze, 2/49, Tbilisi, U.S.S.R.

Filed Apr. 9, 1973, Ser. No. 349,671
Int. Cl. C03c *3/30, 3/10*
U.S. Cl. 106—52 **1 Claim**

1. A gold-to-glass joint containing silicon dioxide, 60 to 62 mol. percent; aluminum oxide, 0.5 to 1 mol. percent; zirconium dioxide, 0.5 to 1.5 mol. percent; strontium oxide, 5 to 7 mol. percent; sodium oxide, 18.5 to 20.5 mol. percent; potassium oxide, 4.5 to 6.5 mol. percent; tungsten trioxide, 1.5 to 2 mol. percent; lanthanum oxide, 0.2 to 0.25 mol. percent and calcium oxide, 6 to 8 mol. percent.

3,847,629

REFRACTORIES

Nigel Austin Hill, Stourport-on-Severn, England, assignor to Morgan Refractories Limited, Neston, Wirral, England

Filed Sept. 1, 1972, Ser. No. 285,649
Claims priority, application Great Britain, Sept. 17, 1971, 43396/71
Int. Cl. C04b *35/10*
U.S. Cl. 106—65 **3 Claims**

1. A plasticized mouldable alumina-base composition hardenable on firing to give a refractory, and consisting essentially of an alumina aggregate, a plasticizer, and a water-insoluble chromium phosphate as a bonding agent for the alumina, said phosphate forming 0.5 to 10 percent by weight of the composition.

3,847,630

METHOD FOR THE PRODUCTION OF WATER-PERMEABLE POROUS CONCRETE

Josef Compernass, Nieder-Liebersbach; Eberhard Grunberger, Dusseldorf-Wersten, and Friedo Eberhard Schmidt, Mannheim-Freudenheim, all of Germany, assignors to Henkel & Cie GmbH, Dusseldorf-Holthausen, Germany

Continuation-in-part of Ser. No. 79,666, Oct. 9, 1970, abandoned. This application Oct. 27, 1972, Ser. No. 301,380
Claims priority, application Germany, Oct. 22, 1969, 1953158; Oct. 22, 1969, 1953159
Int. Cl. C04b *7/02*
U.S. Cl. 106—90 **16 Claims**

1. A method for the production of a water-permeable porous concrete comprising the steps of mixing a concrete mixture containing

a. granular mineral aggregates consisting essentially of a uniform grain fraction in the range of 3 to 30 mm with a tolerance range of 4 to 15 mm.,
b. hydraulic cement in the prescribed amount according to the job specifications,
c. a macromolecular water-soluble compound in an amount of from 0.05 to 2 percent by weight based on the cement, said macromolecular water-soluble compound being selected from the group consisting of plant gums, starch products, cellulose ethers and synthetic polymers, and
d. water in such an amount that the water-cement ratio is between 0.32 and 0.48 whereby said concrete mixture is sprayable, and placing said concrete mixture by spraying.

3,847,631

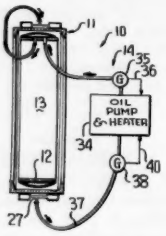
APPARATUS FOR AND METHOD OF RETREADING TIRES

Kenneth T. MacMillan, Macon, Ga., assignor to MacMillan Mold Company, Inc., Macon, Ga.

Continuation of Ser. No. 81,342, Oct. 16, 1970, abandoned. This application Feb. 9, 1973, Ser. No. 331,183
Int. Cl. B29h *5/04, 17/36*
U.S. Cl. 156—96 **21 Claims**

1. Apparatus for retreading tires comprising means defining a generally annular chamber adapted to receive at least the

tread portion of the tire to be retreaded, means defining a generally annular back-up member in internal telescopic relationship to said chamber means, a generally annular flexible bladder in external telescopic relationship to said back-up member, means for introducing and removing liquid into and from said bladder, a source of noncompressible, nonexpandable, noncombustible liquid, a closed liquid circuit including



said source and bladder, said closed liquid circuit further including a high pressure pump for pressurizing said liquid and circulating the same through said closed liquid circuit, and means for heating said liquid to a temperature appreciably above ambient whereby a tire in said chamber means is cured under the influence of the heated and pressurized liquid in said bladder.

3,847,632

MASONRY MATERIAL

Helmer L. Blengsli, Mobile, Ala., assignor to Tekology Corporation, Palisades Park, N.J.

Continuation-in-part of Ser. No. 51,675, July 1, 1970, Pat. No. 3,701,671. This application Oct. 30, 1972, Ser. No. 302,289

Int. Cl. C04b *7/02*

U.S. Cl. 106—97 **4 Claims**

1. A shaped masonry article in the form of a brick, building block or tile comprised of the reaction product obtained by molding, at a pressure of at least 500 psi, a mixture comprised of

a. 85 – 97 parts by weight of an aggregate having a particle size not exceeding U.S. Standard Mesh 8, said aggregate containing at least 50 percent by weight of Bahamian aggregate, with the remainder of said aggregate being a granular, substantially non-porous, inorganic aggregate;

b. 3 – 15 parts by weight of a hydraulic cement; and

c. water in an amount sufficient to substantially completely hydrate the hydraulic cement and thereafter curing the resulting molded shaped article under ambient conditions in the presence of sufficient moisture so as to prevent dehydration until the hydraulic cement is substantially completely hydrated.

3,847,633

BUILDING MATERIAL FOR MODULAR CONSTRUCTION

Andras Race, Chicago, Ill., assignor to Robert L. Litvin, Chicago, Ill. and Louis L. Marino, Chicago, Ill., part interest to each

Filed Apr. 10, 1972, Ser. No. 242,802

Int. Cl. C04b *7/02*

U.S. Cl. 106—98 **2 Claims**

1. An improved building material which is moldable to provide members adapted for assembly at a construction site and includes portland cement and lightweight perlite aggregate wherein the improvement comprises said material: being inorganic; further including vermiculite, soluble sodium silicate, plaster of paris, fly ash, and short strands of fiberglass; consisting essentially, in weight percent of: between about 40-55% portland cement, between about 11-7 percent plaster of paris, between about 11-7% fly ash, between about 6-4 percent vermiculite, between about 24-19 percent perlite, about 5 percent fiberglass, and about 3 percent sodium silicate; and being characterized as: non-toxic non-fuming and fire-retardant when heated or exposed to flames, having a density in the range of 26 pounds per cubic foot, being moldable to shapes including interior wall panels, and adapted for on-site fabrication.

3,847,634

SYNTHETIC LIGHTWEIGHT BUILDING MATERIAL

Ronald C. Vickery, 410 S. Main St., Hudson, Fla. 33568

Filed Mar. 12, 1973, Ser. No. 340,182

Int. Cl. C04b *11/00*

U.S. Cl. 106—109 **10 Claims**

1. A synthetic lightweight building material composition having a compressive strength of about 3,000 to 5,000 pounds per square inch consisting essentially of 1 to 25 percent by weight particulate siliceous material and 2 to 10 percent by weight lime, the remainder comprising a gypsum-type residue selected from a group consisting of phosphogypsum and fluorogypsum, said residue containing as an essential constituent calcium sulfate, said composition being combined with sufficient water to form a slurry wherein the silica constituent of said siliceous material reacts to form complex calcium silicates for producing calcium silicate crystals which act as a binder upon obtaining a hydraulic set.

3,847,635

THIXOTROPIC CEMENTITIOUS COMPOSITION AND PROCESS

Robert G. Lange, Bensenville, Ill., and Walter D. Kobeski, Malcolm Springs, W. Va., assignors to United States Gypsum Company, Chicago, Ill.

Filed July 18, 1973, Ser. No. 380,521

Int. Cl. C04b *11/00*

U.S. Cl. 106—110 **12 Claims**

1. A process for imparting thixotropic characteristics to dilatant cementitious masses of alpha calcium sulfate hemihydrate-portland cement and minor amounts of a dispersing agent comprising the step of adding to the cementitious mass a minor amount by weight of magnesium sulfate.

3,847,636

ABSORBENT ALLOY FIBERS OF SALTS OF CARBOXYALKYLATED STARCH AND REGENERATED CELLULOSE

Frederick R. Smith, Wilmington, Del., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 259,943, June 5, 1972, abandoned. This application Apr. 20, 1973, Ser. No. 352,933

Int. Cl. C08b *21/22, 21/30*

U.S. Cl. 106—168 **7 Claims**

1. An absorbent alloy fiber comprising a regenerated cellulose matrix containing a salt of carboxyalkylated starch uniformly dispersed therein, said regenerated cellulose being a major proportion of the fiber mass.

3,847,637

STABLE WAX SIZING COMPOSITION AND METHOD OF SIZING CELLULOSIC FIBER PRODUCTS

Myron Michael Luszczak, Palatine, Ill., assignor to United States Gypsum Company, Chicago, Ill.

Filed Feb. 26, 1973, Ser. No. 336,138

Int. Cl. C08h *9/06*

U.S. Cl. 106—271 **7 Claims**

1. A stable, aqueous wax emulsion sizing composition consisting essentially of:

a. a continuous aqueous phase;

b. a dispersed waxy material phase containing up to about 45 percent by weight, based on the weight of the composition, of scale wax;

c. about 10–15 percent by weight, based on the weight of the waxy material, of clay; and
d. an amount of sulfuric acid effective to facilitate emulsification of said wax.

3,847,638

HYDRATED METAL OXIDE DEPOSITION

George O. Suman, Jr.; Edwin A. Richardson, both of Houston, and Ronald F. Scheuerman, Bellaire, all of Tex., assignors to Shell Oil Company, Houston, Tex.

Division of Ser. No. 221,401, Jan. 27, 1972, Pat. No. 3,756,315. This application Feb. 12, 1973, Ser. No. 331,940
Int. Cl. C09k 3/00
U.S. Cl. 106—287 SS 7 Claims

1. A treating liquid-forming additive for forming a hydrated metal oxide-depositing treating liquid when mixed with water comprising:
at least one amphoteric metal or amphoteric metal compound that is capable of interacting with a basic aqueous liquid to form an aqueous solution of a hydroxy complex of the amphoteric metal from which solution a hydrated metal oxide can be precipitated;
at least one basic compound that is capable of increasing the pH of an aqueous liquid to a pH at which the solution of said hydroxy complex is formed; and
at least one pH reducing reactive compound that is capable of dissolving in the basic aqueous solution of said hydroxy complex and subsequently reducing the pH of the solution to one at which a hydrated metal oxide of the amphoteric metal is precipitated.

3,847,639

CERAMIC COLOR BODIES

Arno Broll, Rothenbergen; Hermann Beyer, Grossauheim; Herbert Mann, Dornigheim, and Eugen Meyer-Simon, Frankfurt, all of Germany, assignors to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler, Frankfort (Main), Germany

Filed May 1, 1973, Ser. No. 356,166
Claims priority, application Austria, May 5, 1972, 3969/72; May 5, 1972, 3970/72
Int. Cl. C08h 17/02
U.S. Cl. 106—288 B 24 Claims

1. A plural phase ceramic pigment comprising as an outer phase clear crystals of glaze stable material selected from the group consisting of ZrO_2, $ZrSiO_4$, SnO_2, CeO_2, $CePO_4$, Al_2O_3, (Zn, Mg, Co, Ni) (Al, Cr, Fe)$_2O_4$ and $CaSnSiO_5$ and having enclosed therein a member of the group consisting of (1) an inorganic water free colored chalcogenide of zinc, cadmium or mercury or mixed crystals of these chalcogenides wherein the chalcogen has an atomic weight of 32 to 128, (2) PbS, (3) titanium yellow (4) Thenard's blue as a discrete inner phase.

3,847,640

TITANIUM PIGMENT SLURRIES FOR PREPARATION OF LATEX-BASE COATING COMPOSITIONS

John M. Daubenspeck, Westfield, and Bernard Holton Jett, Redbank, both of N.J., assignors to A. L. Industries, Inc., New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,939
Int. Cl. C09c 1/36
U.S. Cl. 106—300 2 Claims

1. An aqueous titanium dioxide pigment slurry having a solids content from 60 to 65 percent on a slurry weight basis, said slurry being adaptable for use in latex paints and comprising a dispersing agent in an amount from 0.2 to 0.7 percent on pigment weight basis and a titanium dioxide pigment, said pigment in said slurry having a post treatment coating consisting of from 5 to 8 percent hydrous silicon oxide, from 3 to 5.2 percent hydrous aluminum oxide and from 0 to 2 percent hydrous titanium oxide, thereby producing a coated titanium dioxide pigment having an oil absorption of from 36 to as high as 46.

3,847,641

WAX EMULSIONS FOR CONTROLLING TRANSPIRATION IN PLANTS

Donald R. Cushman, Wenonah; Edward A. Oberright, Woodbury, both of N.J., and Roy T. Edwards, deceased, late of Mullica Hill, N.J. (by Katherine S. Edwards, legal representative), assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 256,997, May 25, 1972, Pat. No. 3,791,839, which is a continuation-in-part of Ser. No. 60,957, July 2, 1970, abandoned, which is a division of Ser. No. 639,041, May 17, 1967, abandoned. This application Oct. 18, 1973, Ser. No. 407,705
Int. Cl. A01n 5/00
U.S. Cl. 117—3 7 Claims

1. A method for controlling transpiration in plants which comprises applying to the plant surface a wax emulsion composition consisting essentially of, by weight, from about 15 to about 40 percent paraffin wax; from about 5 to about 30 percent petrolatum; from about 2 to about 10 percent of at least one emulsifier selected from the group consisting of non-ionic and anionic emulsifiers; and water in an amount sufficient to form the emulsion.

3,847,642

METHOD FOR TRANSFERRING ELECTROSTATOGRAPHICALLY FORMED IMAGES

Warren L. Rhodes, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 20, 1972, Ser. No. 219,410
Int. Cl. G03g 13/14, 13/16, 13/22
U.S. Cl. 117—17.5 17 Claims

1. An electrostatographic imaging process comprising
providing an imaging member carrying an electrostatic latent image, said imaging member comprising a layer of an organic film forming material having a thickness of from about 2 microns to about 25 microns overlying an electrostatographic imaging surface, said organic material having a resistivity above about 10^{10} ohm-cm, a melting point between about 25°C and about 95°C and a viscosity at its melting point of from about 10 to about 200 centipoises;
developing said electrostatic latent image to form a visible image; and
transferring said developed image to a receiving member by bringing said receiving member into contact with the surface of said imaging member carrying said developed image and separating said receiving member from said imaging member, wherein said organic material is in a liquefied state during said step of transferring and said receiving member comprises a material capable of being wet by said liquefied organic material, wherein said organic material layer splits during said step of transferring with a portion of said layer remaining on said imaging member and a portion of said layer accompanying said developed image to said receiving member.

3,847,643

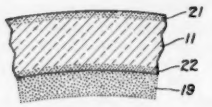
SURFACE TREATMENT OF FLUORESCENT LAMP BULBS AND OTHER GLASS OBJECTS

Edward E. Hammer, Mayfield Village, and William C. Martyny, Lyndhurst, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,431
Int. Cl. H01j 1/62, 63/04
U.S. Cl. 117—33.5 L 11 Claims

1. A method of treating glass, comprising the steps of applying to the glass surface a mixture containing aluminum-s-butoxide and tetrabutyl titanate and a material selected from the group consisting of tri-n-butyl borate and tri-n-butyl antimonite and a mixture thereof, and heating said glass and mixture to a temperature of at least 400° C, the amount of

aluminum-s-butoxide in said mixture being sufficient to cause excess aluminum oxide to be produced and causing said mixture to chemically react with said glass during said heating step.



3,847,644

IMAGING BY PHASE AGGREGATION FROM BLOCK COPOLYMERS

Peter Franklin Erhardt, Webster, and Irwin Andrew Wiehe, Fairport, both of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Nov. 24, 1972, Ser. No. 309,384
Int. Cl. B41m 5/00
U.S. Cl. 117—36.7 8 Claims

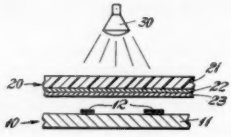
1. A heat-sensitive, dry, non-tacky recording material comprised of a substrate having a uniform coating, said coating comprising a film forming block copolymer which upon imagewise exposure to intense energy radiation undergoes phase separation in the exposed areas giving rise to submicron spherical domain structures, thereby to provide a visible contrast with the surrounding unexposed areas.

3,847,645

THERMOGRAPHIC COPY SHEETS AND PROCESS

Peter De Laurentis, Massapequa, and Douglas A. Newman, Glen Cove, both of N.Y., assignors to Columbia Ribbon and Carbon Manufacturing Co., Inc., Glen Cove, N.Y.

Continuation of Ser. No. 81,737, Oct. 19, 1970, abandoned. This application Nov. 24, 1972, Ser. No. 309,343
Int. Cl. B41m 5/18
U.S. Cl. 117—36.9 8 Claims



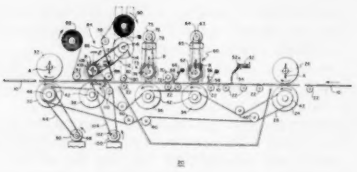
1. Heat-sensitive copy film for projection transparency use comprising a thin clear plastic film foundation having thereon two superposed clear resinous layers which do not melt under conditions of use, one layer comprising a substantially-colorless acid-sensitive dye precursor dissolved in a resinous binder from the group consisting of vinyl chloride polymers and mixtures of vinyl chloride polymers and of vinylidene chloride polymers with from about 25 percent up to 95 percent by weight of another compatible modifying resin, and the other layer consisting essentially of a substantially-colorless heat-vaporizable aromatic acid dissolved in an alcohol-soluble resinous binder comprising a mixture of cellulose acetate butyrate and polyvinyl butyral, which mixture is substantially incompatible with the resinous binder material of the said one layer.

3,847,646

METHOD OF MAKING DECORATIVE PANELS

Lyn R. Daunheimer, Batavia, and William M. Irvine, Lombard, both of Ill., assignors to Masonite Corporation, Chicago, Ill.

Filed Sept. 11, 1972, Ser. No. 287,682
Int. Cl. B44d 5/10
U.S. Cl. 117—37 R 7 Claims



1. A method of decorating the surface of a building panel comprising the steps of flowing liquid stain onto said surface, spreading said stain over said surface, and wiping said stain by the application of woven fabric biased against said surface by a rotating brush, said brush including bristles having free outer ends moving relatively against the back side of said fabric to bias the same into wiping contact with said stain, said bristles positioned for random penetration of the openings in said woven fabric during rotation.

3,847,647

PROCESS OF APPLYING ADHESIVE TO A FLOOR COVERING

Jurgen F. Bahlo, Cherry Hill, N.J., assignor to General Felt Industries, Inc., Saddle Brook, N.J.

Continuation-in-part of Ser. No. 131,019, April 5, 1971, Pat. No. 3,704,197. This application Nov. 22, 1972, Ser. No. 308,811
Int. Cl. B41c 1/18
U.S. Cl. 117—38 4 Claims

1. A process of applying adhesive to a floor covering having a foam backing of 8.5–19 pound/cubic foot density and a traffic bearing layer bonded to the foam backing having a delamination strength of 1.0–2.25 pound/inch, the process comprising the steps of

applying an effective amount of a liquid adhesive to the foam backing in a multiplicity of discrete portions each having an area of less than about .01 square inches and separated from the next adjacent portion by a non-adhesive area, the portions aggregating less than about 50 percent of the area of the foam backing; and

solidifying the adhesive to produce a release strength for the floor covering between .1–.9 pound/inch.

3,847,648

PLATING PRE-TREATMENT IN ACRYLONITRILE BUTADIENE STYRENE

William R. Vincent, and Ismat A. Abu-Isa, both of Birmingham, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 29, 1972, Ser. No. 310,653
Int. Cl. C23c 17/00
U.S. Cl. 117—47 A 2 Claims

1. A method of metalizing acrylonitrile-butadiene-styrene surface including the steps of:

contacting said surface with a conditioning and activating solution for preparing the surface to uniformly accept an adherent metal deposit, said solution consisting essentially of in 1 liter thereof about 35 to about 75 cubic centimeters of methyl ethyl ketone to insure uniform coverage of the surface without producing a blistered deposit, about 5 to about 100 cubic centimeters of concentrated sulfuric acid to increase adhesion of the metal deposit to the surface, up to about 5.6 to 10^{-4} moles of ketopalladium complex formed by the reaction of palladium chloride with methyl ethyl ketone to activate said surface and the balance methyl alcohol; and

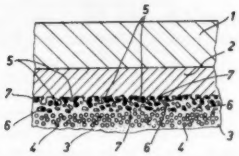
contacting said surface with a reducing solution of a reducible compound of a coating metal to electrolessly deposit said coating metal uniformly and adherently onto said surface.

3,847,649

PROCESS FOR DEPOSITING A METAL LAYER UPON A PLASTIC

Vladimir Sova, Mellingen, Switzerland, assignor to Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 9, 1973, Ser. No. 339,935
Claims priority, application Switzerland, Mar. 16, 1972, 3929/72
Int. Cl. C23c 17/00
U.S. Cl. 117—47 A 12 Claims



1. A process for the deposition of a metal layer onto a plastic body which comprises:

a. admixing a solvent, acid, or base soluble particulate filler, and a catalytically inactive reduceable Group VIII or IB metal salt of the Periodic Table into a curable polymeric resin composition selected from the group consisting of epoxy resins, olefin resins, carbonate resins, acrylic resins, formaldehyde resins, and polyester resins;

b. applying heat so as to effect curing of said polymeric resin composition to form a plastic body, and to simultaneously reduce said metal salt to an active catalytic state for subsequent electroless deposition;

c. removing at least one surface layer of said cured composition so as to expose a portion of said soluble filler and said reduced metal salt; and

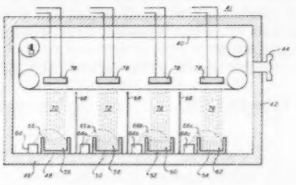
d. desolving out said exposed filler under conditions which do not dissolve said cured polymeric resin and subjecting said treated surface to an electroless deposition from an electroless deposition bath by the catalytic activity of said reduced metal salt.

3,847,650

FLASHLAMP WITH IMPROVED COMBUSTION FOIL AND METHOD OF MAKING SAME

Eric Gregory, Bernardsville; William G. Marancik, Basking Ridge, and Walter J. Shattes, Bloomfield, all of N.J., assignors to Airco Inc., Montvale, N.J.

Division of Ser. No. 178,978, Sept. 9, 1971, Pat. No. 3,749,547. This application Jan. 26, 1973, Ser. No. 326,632
Int. Cl. B44d 1/16; C23c 13/02
U.S. Cl. 117—71 M 9 Claims



1. A method for producing a combustible composite foil suitable for use in flashbulbs, comprising the steps of:

vapor depositing on a stainless steel substrate in a vacuum furnace a layer of combustible non-pyrophoric material wherein said material is selected from the group consisting of aluminum, hafnium, magnesium and mixtures and alloys thereof;

vapor depositing a layer of combustible pyrophoric material of yttrium on said non-pyrophoric layer; and

protecting the exposed surface of the pyrophoric material by forming a protective layer thereon wherein said layer is selected from the group consisting of yttrium oxide or a layer of the non-pyrophoric material before said composite foil is removed from said vacuum furnace.

3,847,651

PROCESS FOR PROVIDING AN OPAQUE WATERPROOF PROTECTIVE COATING FILM ON A SUBSTRATE

Harold William Holden, and Henry Peter Schreiber, both of, Mont-Saint-Hilaire, Quebec, Canada, assignors to Canadian Industries Limited, Montreal, Province of Quebec, Canada

Filed Mar. 26, 1973, Ser. No. 344,613
Claims priority, application Canada, Apr. 14, 1972, 140449
Int. Cl. B44d 1/14
U.S. Cl. 117—72 4 Claims

1. A process for preparing an opaque waterproof protective coating film which comprises the steps of

a. applying to the surface of a substrate a composition consisting essentially of a gellable film-forming polymer and a mixed solvent for said polymer comprising at least two miscible liquids, one of the liquids being a non-solvent for said polymer and having a volatility substantially less than that of the other liquid or liquids of the solvent, the proportion of non-solvent in the solvent mixture being such that during evaporation of the solvent the polymer is precipitated forming an open-celled porous continuous coating on the substrate,

b. eliminating the solvent from the composition, thus forming on the substrate a microporous opaque open-celled coating that absorbs water,

c. applying to the coating on the substrate a solution of a non-polar polymer selected from the group consisting of ethylene-propylene diene terpolymer rubbers, styrene-butadiene rubbers, butyl rubber, ethylene-vinyl acetate copolymers, polystyrene, and vinylidene chloride-acrylonitrile copolymers containing from 0.05 to 6.0

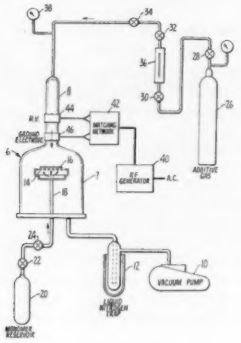
percent by weight of the non-polar polymer dissolved in a non-aqueous solvent that is not a solvent for the film-forming polymer, and

d. eliminating the solvent from the non-polar polymer to form a waterproof coating on the surface of the substrate.

3,847,652
METHOD OF PREPARING WATER PURIFICATION MEMBRANES

James C. Fletcher, Administrator of the National Aeronautics and Space Administration, with respect to an invention of; John R. Hollahan, 760 De Haro St., San Francisco, Calif. 94107, and Theodore Wydeven, 1130 Revere Dr., Sunnyvale, Calif. 94087

Filed Dec. 8, 1972, Ser. No. 313,389
Int. Cl. C08f *1/22, 3/34, 3/00*
U.S. Cl. 117—93.1 GD **11 Claims**



1. A process for making a reverse osmosis membrane for desalination of water comprising the steps of:

a. disposing a microporous substrate in an enclosed space,

b. generating a plasma of an inert gas within said enclosed space,

c. directing symmetrically a gaseous stream of an unsaturated organic compound including at least one allyl group toward and around said substrate, and

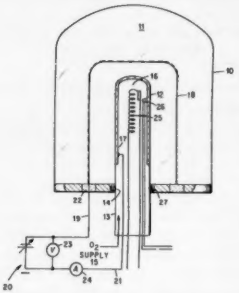
d. directing the said plasma symmetrically and countercurrently toward said gaseous stream and said substrate, whereby the said unsaturated organic compound is polymerized with the aid of the plasma and deposited on the said substrate as a uniform polymer film to form the reverse osmosis membrane.

3,847,653
METHOD AND APPARATUS FOR FABRICATING COMPOSITE CERAMIC MEMBERS

Prodyot Roy, Saratoga; James L. Simpson, San Jose, and Edward A. Aitken, Danville, all of Calif., assignors to The United States of America as represented by the United States Atomic Energy Commission, Washington, D.C.

Filed Oct. 27, 1972, Ser. No. 301,411
Int. Cl. C23c *11/08*
U.S. Cl. 117—93 **4 Claims**

1. A method of fabricating composite ceramic members comprising the step of: simultaneously depositing ThO_2: 15 percent Y_2O_3 on a sintered stabilized zirconia member composed of ZrO_2:15 percent CaO by decomposition of gaseous

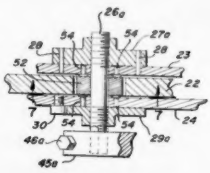


$ThCl_4$ and YCl_3, and by reacting with oxygen gas migrated through the member under an electrical potential gradient.

3,847,654
SUBSTRATE BONDED WITH VINYL DISPERSION TEXTURED COATING

Harlan E. Althouse, Pontiac; Fremont L. Scott, Birmingham, both of Mich., and Gordon E. Cole, Jr., Greenwich, Conn., assignors to M & T Chemicals Inc., New York, N.Y.

Division of Ser. No. 44,625, June 8, 1970, Pat. No. 3,723,379. This application Sept. 22, 1972, Ser. No. 291,387
Int. Cl. C03c *25/02*
U.S. Cl. 117—123 D **8 Claims**



1. An article having a textured selfadhering coating bonded to a substrate, said self-adhering coating composition containing:

a. 16.0 – 34.2 parts by weight of a first vinyl resin having a relative viscosity of 1.98 – 2.35; a molecular weight of about 75,000 – 101,000, and an average particle size of about 0.5 – 7.0 microns;

b. 3.8 – 24.0 parts by weight of a second halogen-containing resin having a specific viscosity of about 0.50, an inherent viscosity of about 1.20, a molecular weight average of about 127,000, and a particle size of at least 7.0 microns to 177 microns;

c. 1.0 – 7.6 parts by weight of a vinyl solution resin with reactive sites having a vinyl chloride content of 75.0 to 91.5 percent copolymerized with at least one member selected from the group consisting of vinyl acetate, vinylidene chloride, or an ester of maleic acid, and having an inherent viscosity of about 0.34 – 0.46;

d. 0.2 – 3.8 parts by weight of a liquid epoxy resin having a viscosity of about 10,000 – 20,000 centipoises and an epoxy equivalent weight of about 180 – 220;

e. 1.2 – 14.7 parts by weight of an aminoplast resin;

f. 17 – 30.4 parts by weight of a plasticizer;

g. about 0.0 – 15.3 parts by weight of a solvent-diluent which when present cooperates with plasticizers to dis-

solve the third vinyl resins (c), the liquid epoxy resin (d), and the aminoplast resin (e) but does not gel or dissolve either the first vinyl resin (a), or the second halogen-containing resin (b) at temperatures of about 20°- 35°C.; and wherein the first vinyl resin (a) and the second resin (b) are incompletely soluble in plasticizer (f) at temperatures of 20°-35°C. and wherein plasticizer (f) is capable of completely solubilizing the third vinyl resin solution (c);

h. 3.0 - 23.7 parts by weight of pigments and/or fillers; and optionally,

i. 1.6 - 2.5 parts by weight of at least one polyvinyl chloride stabilizer, wherein the total parts by weight of ingredients (a) - (i) amounts to 100 parts.

3,847,655
FAST COLORING OF GLASS FIBERS AND GLASS FABRICS

Harry W. Crimmel, Warwick; Emanuel G. Terezakis, Cumberland, and Phyllis A. Sutula, Woonsocket, all of R.I., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 7, 1972, Ser. No. 313,036
Int. Cl. C03c *25/02*
U.S. Cl. 117—126 GQ **24 Claims**

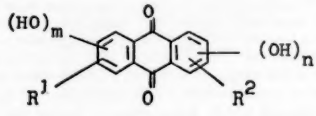
1. A method of coloring glass fibers, comprising: wetting the surface of glass fibers with a polar water miscible organic solvent that carries an organic water insoluble coloring agent therein; neutralizing the polarity of said polar organic solvent in situ on said fibers with water and extracting said polar organic solvent from the wetted surface of said fibers with the water leaving said water insoluble coloring agent as a thin tight coating on the surface of said fibers; and fixing said coating of coloring agent in situ on the surface of said fibers.

3,847,656
METHOD OF COATING OR BONDING METALS

Hans Baumann; Rudolf Glaser, and Peter Bauer, all of Ludwigshafen, Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen/Rhine, Germany

Filed July 17, 1973, Ser. No. 379,986
Claims priority, application Germany, July 18, 1972, 2235141
Int. Cl. B32b *15/08*; **C08f** *1/84*
U.S. Cl. 117—132 C **2 Claims**

1. A method of coating a material selected from the group consisting of copper, brass, zinc, iron and steel or of bonding said metals to each other or to plastics materials using an adhesive, said materials being bonded or coated with said adhesive at a temperature which is above the melting point of the adhesive used and which adhesive essentially consists of a mixture of an ethylene copolymer containing from 0.5 to 30 percent by weight of copolymerized units of an ethylenically unsaturated carboxylic acid with from 0.01 to 5 percent by weight of said ethylene copolymer of a compound having the formula:



wherein

n is equal to 1, 2 or 3 and

m is equal to 0, 1 or 2 and

R^1 and R^2 denotes H, Cl, Br, NO_2, SO_3H, COOH, phenoxy, alkyl, NH_2 or NHR^3 and

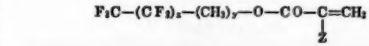
R^3 denotes alkyl or aryl.

3,847,657
HYDROPHOBIC AND OLEOPHOBIC FINISH

Martin Rieber, Schonberg, Taunus, and Wilhelm Loffler, Kelkheim, Taunus, both of Germany, assignors to Farbwerke Hoechst Atkiengesellschaft vormals Meister Lucius & Bruning, Frankfurt/Main, Germany

Filed Oct. 17, 1972, Ser. No. 298,457
Claims priority, application Germany, Oct. 18, 1971, 2151755
Int. Cl. D06m *15/38*
U.S. Cl. 117—135.5 **19 Claims**

1. A process for rendering polyester materials for fibers and foils water- and oil repellant which comprises contacting said material with a mixture of a fluoroalkyl acrylate or methacrylate and tetrachloroethane and effecting a graft polymerization or polymerization or both of these reactions by addition of an effective amount of a free radical generating catalyst, wherein said fluoroalkyl acrylate or methacrylate has the formula

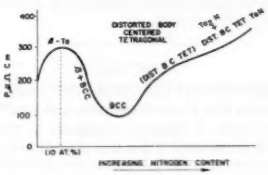


in which x is a number of 2 to 17, y is a number of zero to 4 and Z is hydrogen or methyl and wherein from 0.1% to 10% referred to the weight of the polyester of said fluoroalkyl compound are added onto the polyester material.

3,847,658
ARTICLE OF MANUFACTURE HAVING A FILM COMPRISING NITROGEN-DOPED BETA TANTALUM

Henry Yasuo Kumagai, Lower Macungie Twsp., Lehigh County, Pa., assignor to Western Electric Company, Incorporated, New York, N.Y.

Division of Ser. No. 217,876, Jan. 14, 1972, Pat. No. 3,723,838. This application Dec. 15, 1972, Ser. No. 315,758
Int. Cl. C23c *13/02*; **H01g** *1/01*
U.S. Cl. 117—201 **4 Claims**



1. An article of manufacture which comprises a non-conductive substrate having a film comprising nitrogen-doped beta tantalum wherein nitrogen is present in an amount ranging from about 0.1 atomic percent to about 10 atomic percent nitrogen.

3,847,659
PROCESS FOR PRODUCING PLASTIC ARTICLES HAVING TRANSPARENT ELECTROCONDUCTIVE COATINGS

Shigenobu Sobajima; Norio Takagi, and Kiyoshi Chiba, all of Tokyo, Japan, assignors to Teijin Limited, Osaka, Japan

Filed Nov. 7, 1972, Ser. No. 304,482
Claims priority, application Japan, Nov. 13, 1971, 46-90770
Int. Cl. H05b *33/23*; **C23c** *11/00*
U.S. Cl. 117—211 **15 Claims**

1. A method for preparing a transparent electrically conductive article which comprises forming a gray to black color coating of lower oxides of indium on the surface of a plastic material by vacuum evaporation using indic oxide as an evaporating source at a pressure lower than 5×10^{-4}mmHg while

maintaining the temperature of the evaporating source at 1,300° to 2,000°C., and thereafter oxidizing said coating until the coating becomes transparent so that the transmittance of 600 nonameters light through the coating reaches 60 to 95 percent.

3,847,660

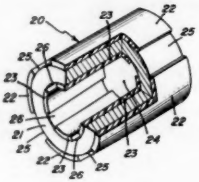
BI-POLAR ACRIVATING PARTICLES FOR ELECTRODEPOSITION PROCESS

Steve Eisner, Schenectady, N.Y., assignor to Norton Company, Troy, N.Y.

Division of Ser. No. 147,409, May 27, 1971, Pat. No. 3,699,017. This application May 31, 1972, Ser. No. 258,421

Int. Cl. B44d *1/18, 1/34*

U.S. Cl. 117—212 **4 Claims**



1. A bi-polar conductive particle for use in electrochemical processes which comprises:

a. a conductive metal core member; and

b. a hard, non-conductive sheath completely encapsulating said core member except at diametrically opposed openings therein which permit contact between such conductive core and a liquid electrolyte when the particle is immersed in such electrolyte;

c. said core member being recessed at said openings in said non-conductive sheath.

3,847,661

ELECTROSTATIC IMAGING PAPER

Andrew William Hill, Great Missenden, and Paul Donald Sims, Hazlemere, both of England, assignors to Wiggins Teape Research & Development Limited, London, England

Filed Dec. 12, 1972, Ser. No. 314,435

Claims priority, application Great Britain, Dec. 20, 1971, 59082/71

Int. Cl. B44d *1/16;* **G03g** *5/04*

U.S. Cl. 117—218 **23 Claims**

1. An electrostatic imaging paper comprising an electrically conductive base paper having on one side thereof a continuous coating of dielectric material, said dielectric material coating being of a polymeric material deposited from an aqueous dispersion which has a minimum film-forming temperature not greater than 30°C and wherein said polymeric material is selected from the group consisting of polyolefins, substituted polyolefins and condensation polymers.

3,847,662

APPARATUS AND METHOD FOR SONIC CLEANING OF HUMAN TEETH

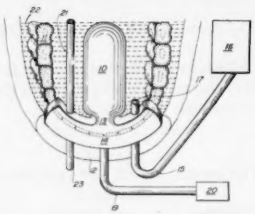
Frank Massa, Cohasset, Mass., assignor to Massa Division, Dynamics Corporation of America, Hingham, Mass.

Filed June 28, 1972, Ser. No. 267,007

Int. Cl. B08b *7/02;* **B01j** *1/12*

U.S. Cl. 134—1 **16 Claims**

1. An apparatus for sonically cleaning natural human teeth comprising an electroacoustic transducer means shaped and dimensioned to fit inside the mouth cavity behind the teeth and be sealed therein by the lips, support means associated with said transducer means and shaped to be held clamped between the front teeth while said transducer is sealed inside the mouth cavity by the lips, liquid conveyor means attached



to said support means to enable passage of a liquid into the entirety of the mouth cavity with the face pointing downwardly, said liquid being conveyed into the mouth cavity through said support means, and means for driving said electroacoustic transducer to generate sonic energy in the liquid submerging the transducer inside said mouth cavity.

3,847,663

CLEANING OF METALS WITH COMPOSITIONS CONTAINING ALKALI METAL SILICATE AND CHLORIDE

Gary Allen Shumaker, Mentor, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Continuation-in-part of Ser. No. 58,182, July 24, 1970, abandoned. This application July 19, 1972, Ser. No. 273,253

Int. Cl. C23g *1/14*

U.S. Cl. 134—2 **6 Claims**

1. A method for cleaning the surface of metals during processing thereof which comprises contacting said surface at a temperature of about 50°–100°C. with an aqueous cleaning composition in the liquid state wherein the active ingredients comprise water-soluble alkali metal silicate and alkali metal chloride, the weight ratio of said silicate to said chloride being between about 4:1 and 10:1.

3,847,664

FIBERGLASS RECLAIMING

Jean J. O. Gravel, 435 Norman St., Montreal, Quebec, Canada (645)

Filed Mar. 22, 1973, Ser. No. 343,762

Int. Cl. C03b *29/00;* **C03c** *25/00*

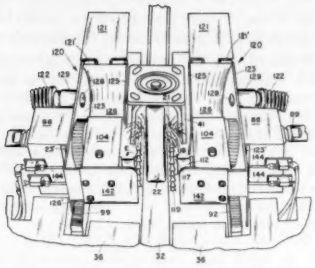
U.S. Cl. 134—2 **8 Claims**

1. A method of removing organic binder material from the surface of randomly oriented glass fibers forming a bulk material which method comprises removing oxygen from the interstices of said bulk material and passing a gaseous mixture containing oxygen and water vapour through said bulk material so as to contact the surfaces of said glass fibers at a temperature in the range of 800°F to 1,200°F which is at least sufficient to cause oxidation and gasification of the organic binder material which temperature is below the incipient fusion of the glass fibers; said gaseous mixture being prepared by injecting a water spray into the flame of gas burning furnace, said gaseous mixture also including gases which are non-reactive with said binder; the relative proportions of water vapour and oxygen in said gaseous mixture being selected to maintain said temperature in the aforesaid range, said gaseous mixture containing 1 to 4 percent by weight of oxygen and 30 to 50 percent by weight of water vapour.

3,847,665
METHOD AND APPARATUS FOR REMOVING FILAMENTS FROM THE AXLE OF A CASTER

Henry J. Quint, Grandville, Mich., assignor to Rapistan Incorporated, Grand Rapids, Mich.

Filed May 4, 1973, Ser. No. 357,246
Int. Cl. B08b *1/04;* **B60s** *1/68*
U.S. Cl. 134—6 **24 Claims**

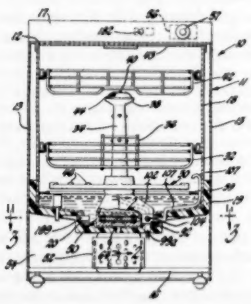


1. A method of removing material accumulated around the axle of a caster between the caster frame and wheel comprising the steps of:
providing guide means for receiving a caster wheel;
positioning the caster on the guide means to align the caster in predetermined orientation;
providing material removal means;
clamping the caster in the aligned position on the guide means; and
circumscribing an arcuate portion of the axle of the caster with the removal means spaced at a predetermined distance from the axis of the caster axle sufficient to remove the accumulated material.

3,847,666
WATER HEATING SYSTEM FOR A DISHWASHER

James W. Jacobs, Dayton, Ohio, assignor to General Motors Corporation, Detroit, Mich.

Filed May 24, 1973, Ser. No. 363,590
Int. Cl. B08b *3/02*
U.S. Cl. 134—57 D **3 Claims**

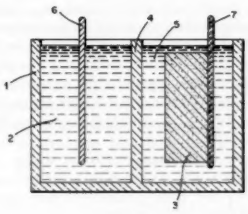


1. A dishwasher including walls enclosing a dishwashing chamber and defining an access opening, a door for enclosing said dishwashing chamber, means for spraying in said chamber, means for supporting dishes in exposed relationship to said spray means, one of said walls forming a sump below said support means, a regenerative pump assembly having an inlet fluidly connected to said sump and an outlet fluidly connected to a valve, said pump having a housing enclosing a circular channel between said pump inlet and said pump outlet; an impeller rotated within said pump housing by an electric drive motor, said impeller having a plurality of turbine buckets formed along its peripheral edge which are movable through said circular channel as said impeller rotates for passing fluid between said inlet and said outlet and for heating the fluid in said annular channel by the impact of said moving buckets upon the fluid; said valve having outlets operative in response to control means for circulating fluid flow from said pump outlet to said spray means and to said sump for return to said pump; said valve sump outlet being in the form of a restricted passage to throttle its discharge whereby upon said control means causing said pump outlet to be connected to said restricted passage to increase the amount of work expended by said pump upon the fluid in said pump thereby raising the temperature of the fluid in said buckets before its recirculation to said sump.

3,847,667
ALKALI METAL-POROUS CONDUCTIVE CARBON BATTERY HAVING A MOLTEN ALKALI METAL CHLORALUMINATE ELECTROLYTE

John J. Werth, Princeton, N.J., assignor to ESB Incorporated, Philadelphia, Pa.

Filed Sept. 26, 1972, Ser. No. 292,281
Int. Cl. H01m *43/00*
U.S. Cl. 136—6 FS **13 Claims**



1. A secondary battery comprising in combination:
a. a molten alkali metal anode;
b. a cathode comprising conductive porous carbon;
c. a solic' member separating the anode and the cathode, said member being selectively-ionically-conductive with respect to cations of said molten alkali metal anode; and
d. a molten alkali metal chloraluminate electrolyte on the cathode side of the solid member, wherein the alkali metal of the anode is also present in the alkali metal chloraluminate.

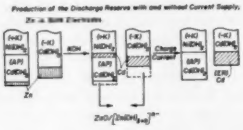
3,847,668
ALKALINE ACCUMULATOR OPERATED IN GAS-TIGHTLY SEALED CONDITION

Gunter Kramer, and Helmut Glaser, both of Kelkheim/Ts., Germany, assignors to Varta Aktiengesellschaft, Kelkheim/-Taunus, Germany

Filed Nov. 14, 1972, Ser. No. 306,277
Claims priority, application Germany, Nov. 15, 1971, 2156554
Int. Cl. H01m *35/00*
U.S. Cl. 136—6 G **4 Claims**

1. In an accumulator of the alkaline type permanently sealed against gas and moisture, a negative electrode having a charge reserve and a discharge reserve, a positive electrode containing positive active mass and antipolar matter, and an oxidation product of zinc, said oxidation product being formed by introducing into the accumulator prior to sealing,

metallic zinc as a reducing agent conductively connected to said antipolar matter of said positive electrode, which zinc together with said alkaline electrolyte effect reaction and reduction of a portion of the antipolar matter of the positive



electrode, said discharge reserve of the negative electrode being formed by charging the electrodes to oxidize said reduced portion of the antipolar matter of the positive electrode and to form simultaneously a discharge reserve of the negative electrode.

3,847,669

REDUCED MERCURY CONTAINING ZINC ALKALINE CELLS

Sam C. Paterniti, Lakewood, Ohio, assignor to Union Carbide Corporation, New York, N.Y.

Continuation of Ser. No. 185,864, Oct. 1, 1971, abandoned. This application Aug. 3, 1973, Ser. No. 385,309

Int. Cl. H01m *4/00*

U.S. Cl. 136—30 **7 Claims**

1. A galvanic cell having a zinc anode, a manganese dioxide cathode and an alkaline electrolyte, said zinc anode containing less than 8 percent mercury based on the weight of the zinc anode, said cell also containing an ethylene oxide polymer selected from the group consisting of diethylene glycol, triethylene glycol, polyethylene glycol having an average molecular weight of from about 190 to about 7,000, C_4 and lower alkyl ethers thereof and C_4 and lower alkanoate esters thereof, said ethylene oxide polymer and said mercury in combination providing an improved storage stability under comparable conditions for said cell as provided by a cell otherwise identical but containing the same quantity of mercury in the absence of said ethylene oxide polymer.

3,847,670

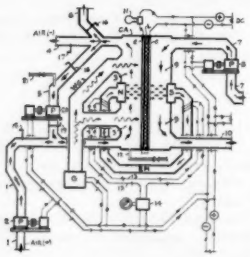
FUEL CELLS USING ELECTROMAGNETIC WAVES

Carsten Ingeman Johnsen, 26 Le Brun, Arendal, Norway

Filed Feb. 28, 1968, Ser. No. 708,994

Int. Cl. H01m *27/02*

U.S. Cl. 136—86 R **2 Claims**



1. in the process for generating electricity which comprises passing an ionized oxidant through the first passage of a producing fuel cell while a fuel is passed through its second passage separated from the first passage by an electrolytic barrier installed between electrodes connected to an external circuit and electrical load; the method enhancing electricity output of fuel cells which includes a first step effecting an intimate association of oxidant ions migrating through the electrolytic barrier on the one hand and advancing waves of electromagnetic origin possessing momentum, appropriate frequencies as well as accompanied with radiation, on the other hand; and a second step orienting the fuel passages and the advancing waves relatively to each other such that the migrating ions and the advancing waves move in the same direction, the advancing waves impinging on the migrating ions thereby augmenting the velocities of said ions and transporting added masses of ions per unit of time through the electrolytic barrier to the fuel cell fuel passage engaging and reacting therein with available fuel entities intensifying and broadening exothermic reactions carried out electrochemically; followed by a third step whereby electrons from electrical charges liberated via said reactions from the additionally transported ions are absorbed by and yielded from respective fuel cell electrodes, external circuit and coupled load in a manner identical with similar absorption and yielding of electrons taking place simultaneously as results of normal activities in conventional producing fuel cells; the said several steps effecting substantial enhancement of electrical output of fuel cells.

3,847,671

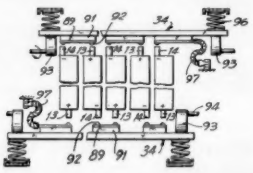
HYDRAULICALLY-REFUELABLE METAL-GAS DEPOLARIZED BATTERY SYSTEM

Angelo F. Leparulo, North Caldwell, and Charles Grun, Matawan, both of N.J., assignors to Electromedia Inc., Summit, N.J.

Filed Apr. 13, 1973, Ser. No. 351,063

Int. Cl. H01m *27/00, 31/00*

U.S. Cl. 136—86 A **20 Claims**



1. A hydraulically refuelable battery system, each cell in the battery of said system comprising bottom and side walls, a negative grid, a positive gas electrode opposed to said grid, a separator between said grid and said positive gas electrode, said negative grid forming with said separator and said side and bottom walls of said cell an anode compartment, first port means above each cell for introducing electrolyte and active metal powder as a slurry in electrolyte into each of said compartments, second port means proximate the bottom of each cell for removing electrolyte and solid discharge products from each cell, first manifold means, first branch tubes connecting said first manifold means with each of said first port means, second manifold means, second branch tubes connecting said second manifold means with each of said second port means, first coupling means for connecting said first manifold means to an external stationary source of electrolyte and active metal powder whereby electrolyte and electrolyte carrying suspended powder as a slurry may be transferred through said first manifold means, said first branch tubes and said first port means to each of said cells, second coupling means for connecting said second manifold means to an external receiver whereby any contents of said cells may be transferred and flushed through said second port means, said second branch tubes and said second manifold means to an external receiver, drain means in said second manifold, whereby conductive electrolyte and suspended metal powder may be drained from said second manifold for preventing undesired electric current therethrough, first valve means in each of said

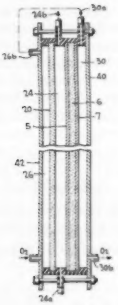
second branch tubes, said second branch tubes and said second manifold having therein portions of electrically insulative material between said first valve means for preventing conduction of electricity therebetween, conduit means in said battery for bringing depolarizing gas to the positive gas electrodes of all cells, switching means for electrically disconnecting all cells from each other during transfer of electrolyte and slurry to and from said battery, said cells being dimensioned to hold the entire quantity of active metal powder to be used by said cells between successive couplings to said external stationary source of active metal powder, thereby making it possible to reactivate an at least partly discharged battery by emptying same of discharge products and electrolyte and refilling the cells of said battery with a slurry of active metal powder suspended in electrolyte, which greatly reduces the time involved for reactivating a battery while avoiding the danger of shorting between opposed electrodes which arises when it is attempted to reduce metal ions to metal electrochemically in a cell used for discharge.

3,847,672

FUEL CELL WITH GAS SEPARATOR

John C. Trocciola, Glastonbury, and Myles A. Walsh, III, Vernon, both of Conn., assignors to United Aircraft Corporation, East Hartford, Conn.

Filed Aug. 18, 1971, Ser. No. 172,652
Int. Cl. H01m *27/14*
U.S. Cl. 136—86 C **9 Claims**



1. A fuel cell system comprising a fuel cell including an anode, a cathode, and an electrolyte constructed and arranged in operative association with a gaseous carbon dioxide separator including a salt tile comprising an admixture of an alkali or alkaline earth oxide and an alkali or alkaline earth carbonate having two opposed surfaces, means for bringing a reform gas in contact with one opposed surface of said salt tile, means for bringing a sweep gas in contact with the second opposed surface of said salt tile, and means for providing said reform gas after contacting said one opposed surface of said salt tile to said anode.

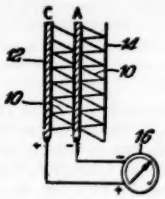
3,847,673

HYDRAZINE CONCENTRATION SENSING CELL FOR FUEL CELL ELECTROLYTE

Karl V. Kordesch, Lakewood, and Milton B. Clark, North Royalton, both of Ohio, assignors to Union Carbide Corporation, New York, N.Y.

Filed Aug. 22, 1968, Ser. No. 754,560
Int. Cl. H01m *27/00*
U.S. Cl. 136—86 B **6 Claims**

1. A hydrazine sensing cell for monitoring the concentration of hydrazine dissolved in a fuel cell electrolyte which comprises a depolarized cathode, the surface of which is in contact with said hydrazine-containing electrolyte, a hydrazine anode in contact with said hydrazine-containing electrolyte, means



for measuring changes in the open circuit voltage of said cell and means for adding hydrazine to said electrolyte in response to a decrease in said open circuit voltage.

3,847,674

VOLTAIC CELL WITH FUSED COPPER SULFIDE CATHODE

Matthew Roland Kegelman, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 229,569, Feb. 25, 1972, , which is a continuation-in-part of Ser. No. 26,762, April 8, 1970,. This application May 10, 1973, Ser. No. 358,859
Int. Cl. H01m *17/02*
U.S. Cl. 136—100 **3 Claims**

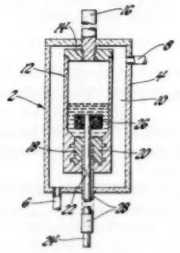
1. In a voltaic cell comprising an anode selected from the group of lithium, sodium, potassium, beryllium, magnesium and calcium, a copper sulfide cathode and an electrolyte which is non-reactive toward other cell components and has a conductivity of at least 10^{-3} ohm^{-1} cm^{-1} the improvement comprising a porous cathode structure consisting essentially of fused copper sulfide and having a porosity of at least 40% and a resistivity of less than 0.5 ohm-cm.

3,847,675

INSULATING SEAL FOR MOLTEN SALT BATTERY

Ram A. Sharma, Sterling Heights, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Nov. 28, 1972, Ser. No. 309,959
Int. Cl. H01m *1/02*
U.S. Cl. 136—133 **2 Claims**



1. In a high temperature electro-chemical cell, having a chamber containing electrolyte, an electrode for one of the cell's reactants contacting said electrolyte, a counterelectrode for another of the cell's reactants contacting said electrolyte and spaced apart from said electrode through said electrolyte, and an electrolyte-tight insulating seal electrically isolating said electrode from said counterelectrode and defining part of said chamber, the improvement comprising: said seal consisting essentially of solid lithium fluoride and a means for miti-

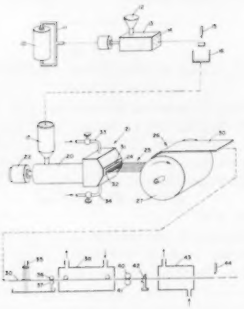
gating the effects of lithium fluoride's thermal expansion properties; and said electrolyte comprising a mixture of lithium fluoride and a salt which when fused ionically conducts the cell's current, wherein the lithium fluoride present in the electrolyte is sufficient to substantially saturate the fused salt and the fused salt has a decomposition potential less than said lithium fluoride.

3,847,676

BATTERY SEPARATOR MANUFACTURING PROCESS

Nigel Innes Palmer, Lexington; Nathan Sugarman, Needham, and Don O'Neil Grammer, Scituate, all of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Filed Dec. 21, 1972, Ser. No. 317,108
Int. Cl. H01m *3/02*
U.S. Cl. 136—148 **10 Claims**



1. A method of producing a battery separator from polymeric resin having a degree of undesirable hydrophobia, solid below 180°F, extrudable as a hot melt and resistant to degradation by at least either acids or alkalies comprising forming a mixture of said polymeric resin and a wetting agent, extruding said mixture as a hot plastic through die openings and forming fibers containing said wetting agent therein, coating said fibers with a second wetting agent and blooming the first said wetting agent.

ERRATUM

For Class 145—2 see:
Patent No. 3,847,679

3,847,677

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICES

Tadashi Takeda, Touyo; Yukiyoshi Nakazawa, Tokyo, and Hiroshi Ikeda, Yamanashi-ken,, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

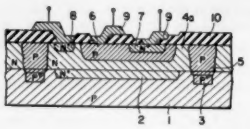
Filed Jan. 24, 1973, Ser. No. 326,493
Claims priority, application Japan, Jan. 24, 1972, 47-8351
Int. Cl. H011 *7/54*
U.S. Cl. 148—1.5 **7 Claims**

1. In a method of manufacturing a semiconductor device, the improvement comprising the steps of:

a. implanting an impurity into at least one prescribed portion of a semiconductor substrate of a first conductivity type to form at least one buried layer of said first conductivity type, said buried layer having a greater impurity concentration than that of said substrate while being non-contiguous to a principal surface of said substrate;

b. epitaxially growing a semiconductor layer of a second conductivity type, opposite said first conductivity type, on said principal surface of said substrate; and

c. selectively diffusing an impurity into said semiconductor layer to form a first diffusion layer of said first conductivity type in said semiconductor layer which diffuses to a depth to become contiguous with a second diffusion layer which has formed from the outdiffusion of the impurity in



said at least one prescribed portion of said substrate through said substrate and into said semiconductor layer formed on the principal surface thereof,

thereby forming an inactive isolation region extending through said semiconductor layer.

3,847,678

HELICAL STEEL SPRING AND METHOD

Samuel T. Furr, Emmaus, Pa., assignor to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Nov. 16, 1972, Ser. No. 307,282
Int. Cl. C21d *9/02, 7/14;* **C22c** *39/44*
U.S. Cl. 148—2 **2 Claims**

1. A quenched and tempered helical spring, hot-formed from as-rolled bar stock, characterized by a hardness between about R_c48 and R_c52 and a high resistance to load loss as exemplified by a Bauschinger Twist/Permanent Set Ratio between about 0.85 and 1.10, and consisting essentially of, by weight, about 0.76 to 0.91 percent carbon, about .75 to 1.00 percent manganese, about 0.70 to 1.10 percent silicon, about 0.25 to 0.40 percent chromium, with the balance iron and incidental impurities.

3,847,679

DIRECTIONAL EUTECTOID COMPOSITES BY SOLID-STATE UP-TRANSFORMATION

James D. Livingston, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 15, 1973, Ser. No. 416,255
Int. Cl. C22c *19/00, 39/20*
U.S. Cl. 148—2 **2 Claims**

1. A process for producing a solid composite of at least two different metal phases with one phase in the form of substantially uniform parallel lamellae, rods or fibers passing through a matrix of the second or other phases which comprises providing an alloy which forms at an elevated temperature a single solid phase that decomposes eutectoidally when cooled through a eutectoid temperature to form at least two solid phases, said alloy having a decomposition temperature varying with velocity of motion down a temperature gradient, heating said alloy to a temperature above its eutectoid temperature to form said single solid phase, quenching the resulting single solid phase alloy to retain said phase at about room temperature, unidirectionally raising the temperature of the resulting quenched single solid phase alloy through a thermal gradient of at least 50°C per cm. at a velocity of transformation which on reaching transformation temperature directionally transforms said quenched solid to produce an aligned solid composite of at least two phases wherein one of said phases is aligned in the form of substantially uniform lamellae, fibers or rods substantially parallel to each other and to the thermal gradient, said transformation temperature being a minimum of 20°C below said decomposition temperature when said velocities are equivalent in the range from a minimum velocity up to 75 percent of the maximum velocity of transformation to produce said aligned solid composite.

3,847,680

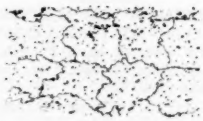
DISPERSION STRENGTHENED METALS AND ALLOYS AND PROCESS FOR PRODUCING SAME

David A. W. Fustukian; Bud W. Kushnir, both of Edmonton, Alberta; Leon F. Norris, and Robert W. Fraser, both of Fort Saskatchewan, Alberta, all of Canada, assignors to Sherritt Gordon Mines Limited, Ontario, Canada

Continuation-in-part of Ser. No. 25,135, April 2, 1970, abandoned. This application Nov. 1, 1972, Ser. No. 302,807

Int. Cl. B22f *3/24*; C21d *1/26*

U.S. Cl. 148—11.5 F 19 Claims



1. A process for producing wrought dispersion strengthened nickel, cobalt and alloys of these metals with each other and with chromium which comprises providing a sintered workpiece formed from a powder composition containing uniformly dispersed submicron refractory oxide particles and one or more of said metals in the proportion desired in the final wrought product, said workpiece having a grain structure characterized by the presence of a substantial proportion of small grains whose greatest diameter is less than 30 microns, hot working said workpiece to effect a cross-sectional area reduction at least sufficient to ensure consolidation of the workpiece to substantially full density and to effect at least a 15 percent reduction in cross-sectional area of the densified workpiece, maintaining the temperature of said workpiece at an elevated temperature below its melting temperature but no lower than the minimum temperature at which dynamic recrystallization occurs in the microstructure of said workpiece at least while effecting the final 15 percent reduction in cross-sectional area of the fully densified workpiece, heat treating said hot worked workpiece at a temperature below its melting temperature but sufficiently high and for a period of time sufficient to cause recrystallization and growth of large equiaxed grains in the workpiece microstructure.

3,847,681

PROCESSES FOR THE FABRICATION OF 7000 SERIES ALUMINUM ALLOYS

Jeffrey Waldman, Huntingdon Valley; Harry V. Sulinski, Philadelphia, and Harold Markus, Huntingdon Valley, all of Pa., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 9, 1973, Ser. No. 414,564

Int. Cl. C22f *1/04*

U.S. Cl. 148—11.5 A 17 Claims

1. A commercially feasible, intermediate thermal mechanical treatment for 7,000 series aluminum alloys for improving ductility and fracture toughness thereof without concomitant reduction in their strengths, said treatment being applicable to as-cast ingot alloy or wrought alloy, plate or sheet, said treatment steps comprising

prehomogenizing said alloy at 860°F for 8 to 48 hours to dissolve the interdendritic networks of Zn–Mg–and Cu–bearing compounds and to precipitate Cr out of solution, slowly cooling said prehomogenized alloy to 775°F in about 3 hours,

annealing said cooled prehomogenized alloy at 775°F for 3 to 5 hours; slowly cooling said annealed alloy to a temperature range of about 450° to 500°F and holding at said temperature range for 4 hours to precipitate the Zn, Mg and Cu out of solution as coarse compounds to render the alloy amenable to plastic deformation,

plastically deforming said stabilized alloy at least 50 percent at a temperature from ambient to 500°F to generate sufficient stored energy therewithin to enable recrystallization of said stabilized alloy into a fine grained structure, and

rapidly recrystallizing and homogenizing said deformed alloy at a temperature ranging between 860° to 900°F for 24 to 48 hours to provide said deformed alloy with a fine grained recrystallized structure.

3,847,682

METHOD OF STRENGTHENING LOW CARBON STEEL AND PRODUCT THEREOF

Rollin E. Hook, Dayton, Ohio, assignor to Armco Steel Corporation, Middletown, Ohio

Filed Nov. 14, 1972, Ser. No. 306,390

Int. Cl. C21d *9/48*

U.S. Cl. 148—12.1 21 Claims

1. A method of increasing the yield strength of a low carbon steel sheet stock, which comprises:

providing a deep drawing quality steel containing from about 0.002 percent to about 0.015 percent carbon, up to about 0.012 percent nitrogen, up to about 0.08 percent alluminum, and a nitride-forming element chosen from the group consisting of titanium, columbium, zirconium, and mixtures thereof, in amounts such that titanium in solution is from about 0.02 to about 0.2 percent, columbium in solution is from about 0.025 percent to about 0.3 percent, and zirconium in solution is from about 0.025 percent to about 0.3 percent, all percentages being by weight;

reducing said steel to final thickness; and heating the resulting sheet stock in an atmosphere comprising ammonia and hydrogen at a temperature between 1,100° and 1,350°F for a period of time sufficient to cause reaction of said nitride-forming element with the nitrogen of said ammonia to form small, uniformly dispersed nitrides, whereby to increase the average yield strength of said sheet stock to a minimum of 60 ksi, the concentration of ammonia in said atmosphere ranging between about 2 percent and 10 percent by volume and being insufficient, at the temperature and time involved, to permit formation of iron nitride.

3,847,683

PROCESSES FOR PRODUCING NOVEL STEELS

Aiyaswami Suryanarayan Sastri, Stow, Mass., assignor to The Gillette Company, Boston, Mass.

Continuation-in-part of Ser. No. 194,166, Nov. 1, 1971, Pat. No. 3,756,865. This application Feb. 16, 1973, Ser. No. 332,917

Int. Cl. C21d *1/78*; C22c *39/30*, *39/32*

U.S. Cl. 148—12.3 11 Claims

1. A process for making steel which in its finished form is mainly austenitic, has hardnesses which are at least comparable to high carbon martensitic steel, and has improved temper-resistance, said process comprising (*a*) heating a steel comprising from about 7 to 30 percent manganese and 0.6 to about 1.4 percent carbon to at least the austenitizing temperature for a sufficient time to make it fully austenitic and to dissolve sufficient carbides so as to depress the Ms temperature of said steel sufficiently below room temperature that the steel will remain mainly in the austenitic form when it is both cooled to room temperature and subsequently cold-worked; (*b*) cold-working said steel and thereafter (*c*) age-hardening said steel.

3,847,684
METHOD OF QUENCHING ZIRCONIUM AND ALLOYS THEREOF

Darryl D. Amick, Albany, Oreg., assignor to Teledyne Wah Chang Albany, Albany, Oreg.

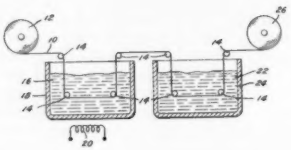
Filed Sept. 20, 1973, Ser. No. 399,130
Int. Cl. C22f 1/18
U.S. Cl. 148—20.6 2 Claims

1. In a method of heat treating zirconium and its alloys by quenching from the beta phase temperature range followed by subjecting the material to an alpha range temperature treatment; wherein the improvement, comprises conducting said quenching step by immersing the material in water maintained at a temperature of at least about 140°F.

3,847,685
OXIDE COATED METAL DISCS AND METHOD OF MAKING THE SAME

Robert Baboian, North Attleboro, Mass., and Peter O. Fiore, Cumberland, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 11, 1970, Ser. No. 10,533
Int. Cl. C23f 7/02
U.S. Cl. 148—31.5 9 Claims

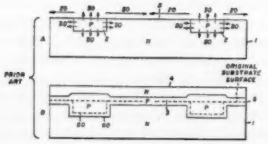


1. A method for making an improved snap-acting element comprising the steps of providing a metal material having at least one surface layer thereof formed of a material selected from the group consisting of the metals and alloys set forth in Table I, said surface layer being free of oxide scale, and immersing said metal material in an oxidizing bath comprising fused alkali metal hydroxide for forming an abrasion-resistant metal oxide coating on said surface layer, and deforming said metal material to provide said metal material with a portion of dished configuration for forming a snap-acting element.

3,847,686
METHOD OF FORMING SILICON EPITAXIAL LAYERS

Leonard Stein, Dewitt, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 40,903, May 27, 1970, abandoned.
This application Feb. 15, 1973, Ser. No. 332,774
Int. Cl. H01l 7/36; C23c 11/00; H01l 5/00
U.S. Cl. 148—175 10 Claims

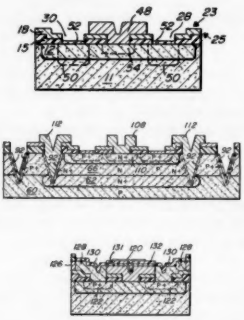


1. An improved method of forming a silicon epitaxial layer on one major surface of a silicon semiconductor body including a modified conductivity region having prearranged boundaries, without significantly disturbing the location of said boundaries, comprising preconditioning said surface to receive said epitaxial layer by heating the silicon body in hydrogen to a temperature not exceeding 1,000°C for between 5 to 30 minutes to remove extraneous matter therefrom, and immediately following such preconditioning depositing from a silicon source selected from the group of silicon tetrachloride and silane an epitaxial layer of silicon on said surface while maintaining said semiconductor body at a temperature not exceeding 1,000°C.

3,847,687
METHODS OF FORMING SELF ALIGNED TRANSISTOR STRUCTURE HAVING POLYCRYSTALLINE CONTACTS

Uryon S. Davidsohn, deceased, late of Phoenix, Ariz., and Amil J. Ajamie, administrator, Phoenix, Ariz., assignors to Motorola, Inc., Franklin Park, Ill.

Filed Nov. 15, 1972, Ser. No. 306,762
Int. Cl. H01l 7/44
U.S. Cl. 148—187 12 Claims



1. A process for forming a silicon semiconductor device having a first region of one conductivity type, a closely spaced second region of another conductivity type and a contact to the second region, which are all self-aligned with each other, to facilitate the manufacture of an electrical device having a small geometry in semiconductor material with a surface, the process comprising:

forming a first mask on the surface of the semiconductor material, said first mask having at least a first opening which exposes a selected area of the surface of the semiconductor material through which diffusant forming the first region is to enter and a second opening through which diffusant forming the second region is to enter, said step of forming said first mask includes the steps of forming a first silicon dioxide layer and a first silicon nitride layer, one on top of the other;

forming polycrystalline silicon contacting material in at least said second opening and on said first mask;

forming a second mask overlying said contacting material in said second opening;

diffusing first diffusant through said first opening of said first mask to form the first region of the one conductivity type, said second mask preventing said first diffusant from entering said semiconductor material through said second opening; and

closing said first opening in said first mask and removing said second mask from said second opening and diffusing

second diffusant through said contacting material and said second opening and into said semiconductor material to form said second region of the other conductivity type and the contact therefor, said first mask preventing the second diffusant from otherwise entering the semiconductor material.

ERRATUM

For Class 152—209 see:
Patent No. 3,847,698

3,847,688
SYSTEM FOR ETCHING CERAMIC SURFACES AND THE LIKE

Leland O. Gillice, Auburn, Calif., assignor to Alpha-O Corporation, Reno, Nev.

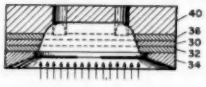
Filed Mar. 5, 1973, Ser. No. 337,874
Int. Cl. B44c *1/22*
U.S. Cl. 156—2 **4 Claims**

1. A system of etching ceramic surfaces and the like including the method characterized by the application to the treated surface of an aqueous solution of hydrofluoric acid, ethylene oxide and nonylphenol, continuing the contact on the treated surface for a period of time sufficient to etch the surface; and thereafter flushing away the solution in order to terminate the contact.

3,847,689
METHOD OF FORMING APERTURE PLATE FOR ELECTRON MICROSCOPE

James C. Fletcher, Administrator of the National Aeronautics and Space Administration with respect to an invention by, and Klaus Heinemann, 1178 Maraschino Dr., Sunnyvale, Calif. 94087

Division of Ser. No. 221,670, Jan. 28, 1972, abandoned. This application June 28, 1973, Ser. No. 374,424
Int. Cl. C23f *1/02*
U.S. Cl. 156—7 **5 Claims**



1. A method of forming an objective aperture plate for an electron microscope having an annular aperture, comprising the steps of:

disposing an annular aperture in the condenser aperture plane to form a hollow cone of electrons;

disposing a first metallic layer in the objective aperture plane of the focused microscope and in the path of said electrons to cause a contamination layer of residual gas molecules to form on first said metallic layer in the area illuminated by said electrons;

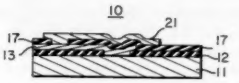
disposing a second metallic layer over that portion of the surface of the first metallic layer which is not covered by the contamination layer; and

etching the composite structure on the side opposite said second metallic layer to a depth transcending said first metallic layer and said contamination layer.

3,847,690
METHOD OF PROTECTING AGAINST ELECTROCHEMICAL EFFECTS DURING METAL ETCHING

James F. Campbell, Jr.; Arthur E. Engvall, both of Sunnyvale, and Arthur E. Lewis, Los Altos, all of Calif., assignors to Fairchild Camera and Instrument Corporation, Syosset, N.Y.

Continuation of Ser. No. 135,442, April 19, 1971, , which is a continuation of Ser. No. 740,935, June 28, 1968, abandoned. This application Oct. 24, 1973, Ser. No. 409,126
Int. Cl. H01l *7/00*
U.S. Cl. 156—13 **1 Claim**



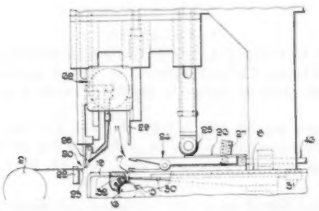
1. In the method of etching portions of a metal layer formed only on the front surface of a slice of semiconductor material containing current conducting paths from its back surface to its front surface, said metal layer being separated in places from said semiconductor material by insulation and the etchant used being selected to substantially etch only the metal layer, comprising the steps of masking said metal layer and etching away the unmasked portions of said metal layer, the improvement comprising the steps of:

placing an insulation resistant to the etching solution on the edges and back side of said slice prior to submerging said slice in an etching solution, submerging the insulation coated slice in the etchant solution for removing the unmasked portions of the metal layer, and removing said slice from the etchant solution, said insulation preventing the formation of any electrochemical effects between the material to be etched and the substrate.

3,847,691
PILE FABRICS AND METHODS AND APPARATUS FOR THE PRODUCTION THEREOF

Herbert Henry Currell, Stourport-on-Severn, England, assignor to Bond Werth Limited, Worcestershire, England

Filed Jan. 22, 1973, Ser. No. 325,800
Claims priority, application Great Britain, Jan. 21, 1972, 2930/72
Int. Cl. D04h *1/58;* **B32b** *5/08*
U.S. Cl. 156—72 **7 Claims**



1. A method of producing a pile fabric comprising the steps of:

a. feeding a preformed ground member with an adhesive coating thereon along a path through a tuft attaching station,

b. feeding a row of tuft-forming lengths of pile yarn to said station from a source of pile yarn presenting yarn ends in a row,

c. pressing a first part of each tuft-forming length in a direction towards said ground member through a slot defined

by constraining means and into the adhesive coating while retaining a further part of each tuft-forming length in said slot to constrain said further part to have an upstanding relation with respect to the ground member,

d. subsequently displacing said further part relative to the constraining means from said slot, and

e. advancing the ground member along said path relative to the constraining means.

3,847,692

METHOD AND APPARATUS FOR MAKING PILE FABRICS FROM A BLOCK OF PILE YARNS

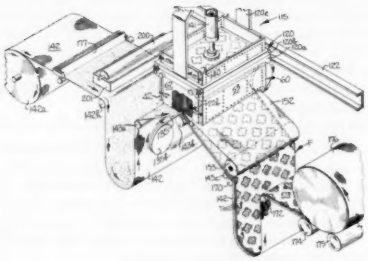
Emanuele Bondi, Milan, Italy, assignor to Fieldcrest Mills, Inc., Eden, N.C.

Continuation-in-part of Ser. Nos. 54,751, July 14, 1970, abandoned, and Ser. No. 316,740, Dec. 20, 1972,. This application May 25, 1973, Ser. No. 363,832

Claims priority, application Italy, July 24, 1969, 20100/69; Dec. 12, 1969, 25744/69

Int. Cl. B32b *5/00, 31/12, 31/18*

U.S. Cl. 156—72 **42 Claims**



1. A method of making pile fabrics such as carpets, rugs and the like from a block of substantially parallel pile yarns in an open-ended container, which comprises incrementally feeding the pile yarns parallel to their axes from the container in successive increments of an amount equal to the desired length of pile, progressively severing the pile yarns transversely of their axes following each successive incremental feeding of the pile yarns from the container while progressively depositing the severed pile yarns onto an adhesive-coated backing to connect the severed pile yarns to the backing, and while advancing the backing relative to the block of pile yarns.

3,847,693

BUOYANT HOSE AND METHOD FOR MAKING SAME

Piero Ghersa; Flavio Torghele, and Cesare Laberinti, all of Milan, Italy, assignors to Industrie Pirelli S.P.A., Milan, Italy

Division of Ser. No. 159,763, July 6, 1971, Pat. No. 3,773,090. This application July 24, 1973, Ser. No. 382,073

Claims priority, application Italy, Feb. 12, 1971, 20456/71

Int. Cl. B32b *5/18*

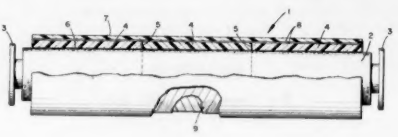
U.S. Cl. 156—79 **4 Claims**

1. A method for applying a buoyant sleeve around a hose member so as to render said member buoyant in water, comprising:

a. fitting a plurality of prefabricated annular bodies of cellular high polymer material around a hose member, with said bodies being arranged in axial succession, their radial end surfaces abutting each other and their inner annular surfaces in contact with the outer surfaces of said hose member, said bodies being free of the surface skin which is common to cellular high polymer material;

b. applying an adhesive agent to said end surfaces and to said annular inner surfaces to thereby, respectively, adhesively join said bodies together and anchor same to said hose member;

c. applying a reinforcing sheer fabric around said bodies;



and

d. applying a polyurethane forming liquid reaction mixture at room temperature continuously around said fabric and permitting said mixture to react to form a unitary continuous outer layer of polyurethane around said fabric.

3,847,694

METHOD OF JOINING SYNTHETIC-RESIN TUBES

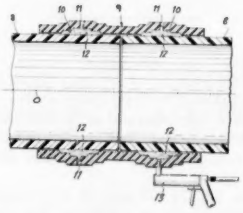
Albert Stewing, Barbarastr. 56, 427 Dorsten, Germany

Filed Feb. 13, 1973, Ser. No. 332,227

Claims priority, application Germany, Feb. 15, 1972, 2207059; Feb. 15, 1972, 2207060

Int. Cl. B29c *27/00*

U.S. Cl. 156—86 **2 Claims**



1. In a method of forming a joint between a tube and a sleeve of thermoplastic synthetic resin, especially hard polyvinyl chloride, in which the sleeve is heat-shrunk onto a portion of the tube surrounded by the sleeve after the tube has been inserted into the sleeve with clearance therebetween, the improvement wherein:

at least said sleeve is formed with a circumferential inwardly open corrugation defining an annular chamber around the tube at said portion;

the heat required for shrinking said sleeve onto said tube is supplied by injecting a heated flowable molten adhesive into said chamber under pressure; and

said adhesive is compressed against said tube by said sleeve upon the shrinkage thereof.

ERRATUM

For Class 156—96 see:
Patent No. 3,847,631

3,847,695

RIMLESS RECAPPING APPARATUS UTILIZING BALANCED AIR PRESSURES

Jerome A. Gross, 6304 S. Rosebury, St. Louis, Mo. 63105

Filed June 28, 1973, Ser. No. 374,675

Int. Cl. B29h *5/04, 17/36*

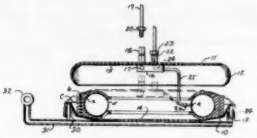
U.S. Cl. 156—96 **8 Claims**

1. For use in a pressurizable chamber for vulcanizing a pre-formed tread strip to a tire casing containing an unvalved

inner tube without any air inlet connection from outside the chamber,

evacuable membrane apparatus comprising

enveloping membrane means having upper and lower portions terminating in outer margins at which the membrane means is adapted to be sealed and having central portions which extend opposite each other to enclose the central circular space between the beads of such casing, an air evacuation outlet extending through said membrane means and having outwardly thereof check valve



means to maintain vacuum between the membranes, and inner tube pressure-balancing means including

an inflation inlet extending through said membrane means and having outwardly thereof an inlet connection and communicating through said membrane means to a pressure hose extending to an inner end coupling connectable to such inner tube,

whereby, after the inflated rounding of such inner tube and subsequent evacuation of such central space, to provide pressure within such inner tube balancing increases and decreases of pressure within such chamber.

3,847,696

PROCESS FOR MAKING LIGHT CONDUCTING PLATES

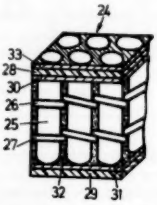
Lorenz Ortner, Frauenaurach; Karl-Georg Heinzelmann; Bernd Conrad, both of Erlangen, and Joachim Dierker, Buckenhof, all of Germany, assignors to Siemens Aktiengesellschaft, Erlangen, Germany

Filed July 15, 1971, Ser. No. 162,918

Claims priority, application Germany, Aug. 27, 1970, 2042408

Int. Cl. B24b *1/00*

U.S. Cl. 156—154 **5 Claims**



1. A process for making light-conducting plates particularly suitable for use in inlets of gamma cameras, said process comprising placing next to each other a plurality of transparent rods and locating between said rods distance holders consisting of wires of deformable material having a thickness greater than the length of the light wave to be transmitted, pressing together said rods and said wires, fixing by a casting mass at least one end of each of said rods, grinding and polishing said ends, removing said casting mass and the grinding and polishing means, then applying a foil to at least one front surface of the produced light-conducting plate, said foil having a thickness of 20 to 100μ and filling spaces remaining between said rods with particles of a granulate, said particles having a large diameter relatively to the length of said light wave.

3,847,697

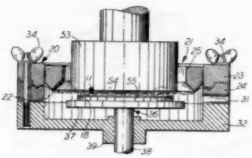
ARTICLE TRANSFER METHOD

Charles R. Baker, Whitehall, and Robert L. Moore, Emmaus, both of Pa., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Oct. 30, 1972, Ser. No. 302,161

Int. Cl. B32b *31/00*

U.S. Cl. 156—155 **7 Claims**



1. A method of handling an array of articles, comprising:

forming a bond between the array and a support to secure the array to such first support;

clamping a second support to the side of the first support having the array bonded thereto to hold the array between the supports;

dissolving the bond between the array and the first support while continuing to clamp the array between the supports;

introducing a liquid substance interstitially between the supports;

hardening the substance to bond the array to the supports and to fix the positions of the articles within the array with respect to each other in such substance;

unclamping the supports; and

liquefying a portion of the substance adjacent the first support to release the first support from the array while maintaining another portion of the substance adjacent the second support in its hardened condition to retain the array bonded to the second support.

3,847,698

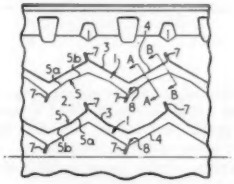
PNEUMATIC TIRES

Arthur S. Ravenhall, Solihull, England, assignor to Dunlop Limited, London, England

Continuation-in-part of Ser. No. 50,014, May 5, 1969, abandoned. This application Oct. 10, 1972, Ser. No. 295,906

Int. Cl. B60c *11/06*

U.S. Cl. 152—209 R **12 Claims**



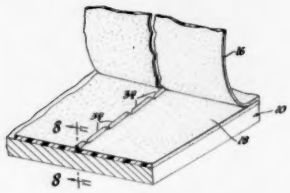
1. A pneumatic tire provided with a tread pattern having at least one generally circumferentially extending groove having limbs of substantially zig-zag or undulating plan form, a junction being formed between the ends of adjacent limbs, the width at the mouth of the groove adjacent to at least some of said junctions, at each end of at least some of said limbs, being greater than the groove mouth width intermediate at least some of said junctions, the change from wider to narrower width being graduated wherein each limb of the zig-zag groove has one wall which is substantially linear, when viewed in plan, and an opposed wall which is substantially non-linear when viewed in plan.

3,847,699

METHOD OF FORMING SIMULATED STITCHES

Donald L. Shaw, North Syracuse, N.Y., and Lawrence D. McLaughlin, Warren, Mich., assignors to General Motors Corporation, Detroit, Mich.

Filed Nov. 8, 1972, Ser. No. 304,860
Int. Cl. B32b 31/18, 31/20
U.S. Cl. 156—251 3 Claims



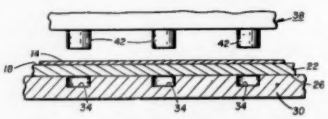
1. A method of forming simulated stitching on a base sheet of thermoplastic material, comprising the steps of positioning a cover sheet of thermoplastic material onto said base sheet of thermoplastic material, cutting a plurality of discrete elongated stitch sections in said cover sheet, simultaneously forming a plurality of equally spaced apertures in said base sheet and embedding the adjacent end portions of each pair of adjacent stitch sections into one of the apertures formed in said base sheet, bonding each stitch section along its length to said base sheet, and removing the cover sheet from the base sheet so as to reveal the simulated stitches.

3,847,700

METHOD OF FORMING A MAGNET PATTERN ON MAGNETIC MEMORY CIRCUIT CARDS

Ajay P. Dalal, Chicago; Paul F. Elarde, Naperville, and Frank A. Klasek, La Grange Park, all of Ill., assignors to Western Electric Company, Incorporated, New York, N.Y.

Filed Nov. 17, 1972, Ser. No. 307,717
Int. Cl. B32b 3/00; B41m 3/08
U.S. Cl. 156—252 5 Claims



1. In a method of compressively securing a pattern of magnetic material wafers in a surface of a malleable substrate having a magnetic permeability which is insignificant with respect to the permeability of the wafers:

overlying a sheet of magnetic material in direct contact with a first surface of the substrate;

positioning the opposite surface of the substrate on a rigid die having a plurality of apertures formed therein in accordance with the wafer pattern, and

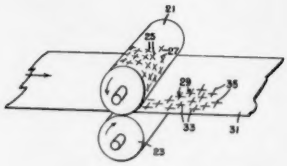
striking at ambient temperature the sheet of magnetic material with a punch to remove a plurality of wafers of magnetic material from the sheet, to displace the material of the substrate and embed the wafers into the first surface of the substrate and to secure the wafers therein by deforming the substrate to compressively surround the edges of the wafers, the apertures in the die receiving extruded portions of the opposite surface of the substrate beneath the wafers as the wafers are embedded into the first surface thereof.

3,847,701

METHOD OF MAKING FORAMINOUS STRUCTURES

Theodore H. Fairbanks, Liverpool, Pa., assignor to FMC Corporation, Philadelphia, Pa.

Filed Feb. 16, 1970, Ser. No. 11,510
Int. Cl. B32b 31/00
U.S. Cl. 156—259 7 Claims



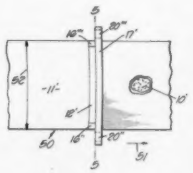
1. A method of making a foraminous structure including the steps of providing a web material with rows of like, equally spaced cross-cuts, each of the cross-cuts comprised of a pair of slits of equal length crossing substantially centrally of and at right angles to each other and arranged with ends thereof located along a common line passing through the ends of slits of an adjacent cross-cut, and pivoting as integral units portions of the web material which extend between adjacent cross-cuts by urging the same about axes which are generally coincident with the common lines passing through the ends of slits of the adjacent cross-cuts between which the respective portions of the web material extend.

3,847,702

PROCESS FOR MANUFACTURE OF INTEGRAL DIAPER WAIST BAND FASTENER

John Leslie Jones, Sr., 1070 Glen Oaks Blvd., Pasadena, Calif. 91105

Division of Ser. No. 867,505, Oct. 20, 1969, Pat. No. 3,610,244. This application Oct. 4, 1971, Ser. No. 185,936
Int. Cl. B32b 31/00
U.S. Cl. 156—265 1 Claim



1. A process for manufacture of single use, disposable, integral baby diapers comprising:

a. forming a waist band stock sheeting of the required web width, having two waist band adhesive securing means disposed on one web face, at opposed web width edges of said sheeting;

b. disposing a first waist band stock sheeting supply of the required web width and a second waist band stock sheeting supply of the required web width symetrically parallel, with respect to each aforesaid web width, across the diaper web width of a moving diaper production line;

c. severing a narrow waist band from each of said first waist band stock sheeting supply and said second waist band stock sheeting supply;

d. disposing said narrow bands from each of said first waist band stock sheeting and said second waist band stock sheeting symetrically with respect to said diaper web width and said narrow bands web widths, and in their respective permanent band positions on said diaper web width;

e. bonding said narrow bands to said diaper web width, at spaced diaper length intervals; and

f. completely severing said diaper web width at said spaced diaper lengths to provide diapers having a first waist band and a second waist band.

3,847,703

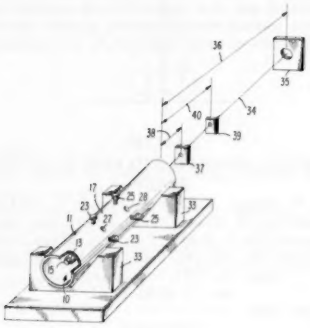
METHOD OF ALIGNING A LASER TUBE WITHIN AN ENVELOPE

Donald Bernard Kaiser, Lancaster, Pa., assignor to RCA Corporation, New York, N.Y.

Filed Aug. 31, 1973, Ser. No. 393,624

Int. Cl. B32b *31/06*

U.S. Cl. 156—294 **4 Claims**



1. A method of aligning a laser device comprising a laser tube within a solid-wall cylindrical envelope using a cylindrical fixture having the same size inside diameter as said envelope and including tube adjustment means thereon, said method comprising the steps of

a. aligning the laser tube within the cylindrical fixture using the adjustment means therein,

b. then forming spaced pads of a cured elastomer adhesive material between said tube and said fixture, said pads being adherent to said tube and nonadherent to said fixture,

c. then removing said tube with said pads adhered thereto from said fixture,

d. and then inserting said tube with said adherent pads thereon within the solid-wall cylindrical envelope to a desired longitudinal location.

3,847,704

APPARATUS FOR FABRICATION PRICE SHIELDS OR THE LIKE CONSISTING OF A PRICE TAG OR LABEL PRINTED BY A BALANCE AND A LABEL SUPPORT

Max Lehner Stirnemann, Haupt Strasse 1001, 5722 Granichen, Switzerland

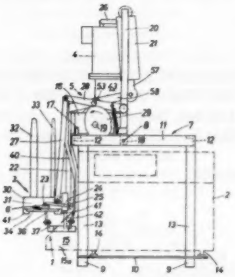
Division of Ser. No. 110,159, Jan. 27, 1971, Pat. No. 3,811,985. This application Apr. 30, 1973, Ser. No. 355,918

Claims priority, application Switzerland, Feb. 2, 1970, 1451/70

Int. Cl. B32b *31/20*

U.S. Cl. 156—364 **10 Claims**

1. An apparatus for the fabrication of price shields or the like composed of a price label printed by a balance and a label support, comprising mechanism for delivering individual label supports to a bonding location for price labels printed by a balance, a balance with means for printing labels having price information thereon, said balance including means for conveying said printed labels to said bonding location, means associated with said mechanism for affixing said label supports to said printed labels, a substantially U-shaped frame means incorporating a first leg means and a second leg means, means for displaceably mounting said mechanism at said first leg means for movement in the direction of the height of said first leg means, shaft means about which said mechanism is pivotably mounted, said second leg means of said frame means



comprising a support surface for a balance, said first and second leg means defining therebetween a compartment for accommodating said balance, said balance arranged in said compartment, and barrier means for preventing the conveying of a label support to said bonding location in the absence of a price label at said bonding location.

3,847,705

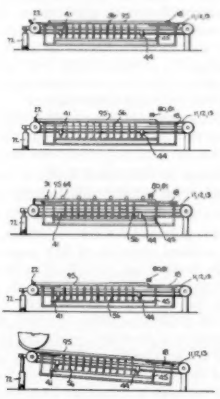
APPARATUS FOR CONVEYING A TIRE TREAD

William Charles Habert, Fraser, and Charles Edward Todd, Detroit, both of Mich., assignors to Uniroyal, Inc., New York, N.Y.

Filed Jan. 22, 1973, Ser. No. 325,693

Int. Cl. B29h *17/02, 5/04;* **B29c** *17/02*

U.S. Cl. 156—405 **9 Claims**



1. Apparatus for conveying a tire tread and for changing the length of the tire tread comprising:

conveyor means for transporting a tire tread;

means for fixedly positioning one end portion of said tread lengthwise with respect to said conveyor means;

means having members spaced along said conveyor means for lifting said tread from said conveyor means with said members engaging said tread at spaced points therealong;

means for driving said members along said conveyor means and including resilient means separating said mem-

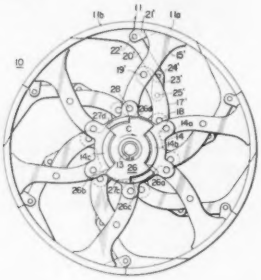
bers for substantially simultaneously displacing said members along said conveyor means relative to each other and relative to said one end portion of said tread to displace said points of engagement of said members with said tread relative to each other and relative to said one end portion of said tread, thereby changing the length of said tread.

3,847,706

COLLAPSIBLE TIRE BUILDING DRUM

Toshinori Yabe, Tokyo, Japan, assignor to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Feb. 22, 1973, Ser. No. 334,881
Int. Cl. B29h *17/16*
U.S. Cl. 156—417 **1 Claim**



1. A collapsible tire building drum, which comprises:

a drive shaft adapted to be rotatable about a building drum axis;

a drive sleeve journaled on said drive shaft;

a first series of arcuate drum segments each having a trailing edge;

a second series of arcuate drum segments disposed in sequential circumferential alternation with the arcuate drum segments of said first series, each segment of said second series being hinged to its next preceding drum segment of said first series at the trailing edge of said next preceding drum segment, said drum segments collectively defining a tire building drum surface;

a linkage mechanism including a first plurality of link arms each having one end fixedly connected to one of said first series of arcuate drum segments and the other end pivotally connected to said drive shaft, a second plurality of link arms each having one end pivotally connected to said drive sleeve and the other end pivotally connected to an intermediate portion of a corresponding one of said first link arms, a third plurality of link arms each having one end fixedly connected to one of said second series of arcuate drum segments, and a fourth plurality of link arms each having one end pivotally connected to the other end of a corresponding one of said third link arms and the other end pivotally connected to an intermediate portion of a corresponding one of the second link arms;

an annular stop member journaled on said drive sleeve;

an additional linkage mechanism including a first plurality of additional link arms each having one end rigidly connected to one of said first series of arcuate drum segments and the other end pivotally connected to said stop member, a second plurality of additional link arms each having one end pivotally connected to said drive sleeve and the other end pivotally connected to an intermediate portion of a corresponding one of said first additional link arms, a third plurality of additional link arms each having one end rigidly connected to one of said second series of arcuate drum segments, and a fourth plurality of additional link arms each having one end pivotally connected to the other end of a corresponding one of said third additional link arms and the other end pivotally connected to an intermediate portion of a corresponding one of said second additional link arms;

a central axle on which said drive shaft is journaled; and

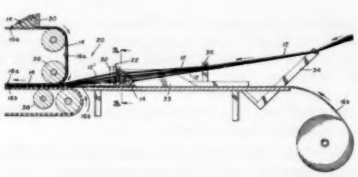
a contoured hub member mounted on said central axle and connected to said drive sleeve, said hub member being enageable with said stop member so that angular rotation is limited to a predetermined extent, whereby said tire building drum can be collapsed, without scratching the peripheral surface of the building drum and without any interference between the parts of the building drum to provide high durability, by rotation of said drive sleeve with respect to said drive shaft to radially retract said first and second series of drum segments into a collapsed drum state with each of said second series of drum segments overlying, in regular shingled array, its next succeeding segment of said first series of drum segments whereas opposite rotation thereof radially extends said first and second series of drum segments to an expanded drum state.

3,847,707

LAMINATING APPARATUS HAVING DUAL DOCTOR BLADE

Raymond W. Meyer, Tallmadge; Francis R. McGranghan, Stow, and Dale K. Evans, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 267,186, Sept. 7, 1972,. This application Mar. 15, 1974, Ser. No. 451,637
Int. Cl. B65h *49/00*
U.S. Ci. 156—436 **9 Claims**



1. In a laminating apparatus the improvement comprising:

a. a horizontally arranged table support;

b. means to feed continuous sheet across said table;

c. a vertically disposed doctor blade in operative association with said table and supported by sidewall members whereby said blade, walls, substrate and table form a trough for containing a resin material to be coated onto said moving sheet and the bottom edge of said blade doctors said coating;

d. said blade having at least one orifice extending through an intermediate portion thereof and below the level of said resin; and

e. means feeding a plurality of continuous fibers through said resin and subsequently through said at least one orifice whereby to produce a continuous length of substantially uniformly coated and formed bundle of fibers.

3,847,708

APPARATUS FOR MAKING BAGS FROM SOFT TAPES OF SYNTHETIC RESINS

Shizuo Takahashi, Abiko; Yoshio Kobayashi, Nagareyama, and Toshio Hosogai, Tokyo, all of Japan, assignors to Tokyo Automatic Machinery Works, Ltd., Tokyo, Japan

Filed Oct. 10, 1972, Ser. No. 296,014
Int. Cl. B31b *1/10*; B65b *43/04*
U.S. Cl. 156—510 **3 Claims**

1. An apparatus for making bags of a soft two-ply tape by delivering the tape upwardly in the vertical direction and

sealing and cutting the tape while it is maintained in the erect state, said apparatus comprising

a pair of feed rollers for delivering the tape upwardly in the vertical direction,

a frill-imparting means disposed above said feed rollers to increase the toughness of the tape by imparting frills to the tape delivered by said feed rollers in its longitudinal

direction,

a cutting device for cutting the tape disposed above said frill-imparting means,

a sealing device for sealing the tape disposed above said cutting device, and

a pair of rotating brushes disposed above said sealing device for nipping the tape frilled by said frill-imparting means to apply tension thereto.

3,847,709

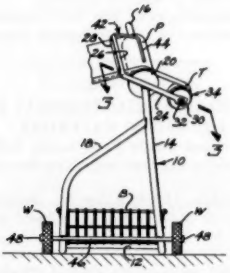
FUNCTIONAL STAND FOR ROLL MATERIALS

Marcus Martin, 1570 E. Hurd Rd., Monroe, Mich. 48167

Filed Nov. 13, 1972, Ser. No. 306,000

Int. Cl. B32b *31/00;* **B31f** *5/06*

U.S. Cl. 156—510 **6 Claims**



1. A portable stand for roll materials comprising: a stand formed of a tube having an upper end which extends upwardly and outwardly at an incline free and clear of surrounding structure to receive a roll of paper slid over the end of the tube, a stop plate surrounding said upwardly and outwardly inclined portion of the tube and spaced from its end by a distance to receive the roll of paper, said upwardly and outwardly inclined free end being at such an angle that gravity holds a roll of paper when telescoped over said end against said stop plate, an L-shaped bracket having an upstanding leg generally parallel to said upper end of said tube and positioned to one side of said tube and its other leg extending transversely across said tube, and a spindle on said bracket on the opposite side of said tube from said upstanding leg of said bracket, said spindle being positioned to support a roll of masking tape generally centered with respect to the lower edge of a roll of paper in abutment with said stop plate, and whereby masking tape from the roll of masking tape can be stuck generally centered on the bottom edge of the roll of paper placed on said end of said tube and will be automatically applied in a position projecting from the edge of the paper as the paper is pulled from the roll.

3,847,710

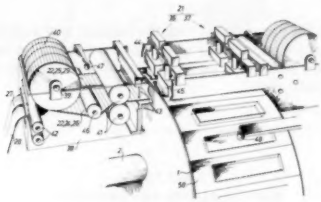
APPARATUS FOR APPLYING SECURING TABS TO DIAPERS, SANITARY TOWELS, COMPRESSES AND SIMILAR ABSORBENT BODIES

Nils Verner Blomqvist, Domsjoverken, and Per Borje Hagg, Ornskoldsvik, both of Sweden, assignors to Mo och Domsjo AB, Ornskoldsvik, Sweden

Filed Apr. 26, 1972, Ser. No. 247,653

Int. Cl. B32b *31/20, 31/10*

U.S. Cl. 156—511 **8 Claims**



1. Apparatus for applying securing tabs to absorbent products conveyed successively as single units attached together in a long strip, said securing tabs being coated on one side with adhesive and having an easily removable protective sheet on the adhesive, comprising, in combination, means for convey ing a long strip of absorbent products in one direction; means for conveying securing tabs having an adhesive on one surface continuously and successively in two parallel rows on each side of the strip of absorbent products, each row moving in a direction substantially at a right angle to the strip, at a level higher than and parallel to the strip, with adhesive surfaces turned downward; means for removing a portion of the protective sheet from the adhesive surfaces of the securing tabs in each row to expose such portions of the adhesive surface; means for separating each securing tab from its respective row of securing tabs; and means for applying the exposed adhesive surfaces of the separated securing tabs in pairs to the absorbent products and the portion of the tabs still having a protective sheet thereon extending beyond the corresponding edge of the respective absorbent products.

3,847,711

HEAT-SEALING SYSTEM FOR PLASTIC CONTAINERS

H. Keith Howard, Ulysses, Kans., assignor to Uly-Pak, Inc., Ulysses, Kans.

Filed Feb. 11, 1972, Ser. No. 225,430

Int. Cl. B30b *15/34;* **B32b** *31/18*

U.S. Cl. 156—515 **25 Claims**

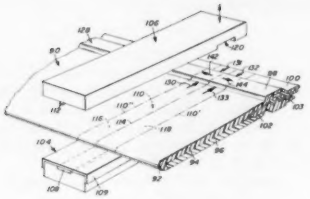
1. An apparatus for forming a plastic bead seal at the end of an openable and reclosable fastener which is located on opposite edges of a plastic sheet, which apparatus comprises: a. sealing means for supporting the fastener end and a regional area of the plastic sheet adjacent the fastener end during the formation of the plastic bead seal,

b. pressure means for applying pressure to the fastener end and to said regional area of the plastic sheet adjacent the fastener end, said pressure means and said sealing means being movable toward each other to engage opposite surfaces of the plastic sheet,

c. means for heating to a plastic flowable condition the

fastener end and said regional area of the plastic sheet, and

d. a channel in at least one of said sealing and pressure



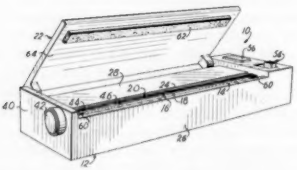
means for engagement with the fastener end and adapted to straddle and slightly pinch the fastener end when said pressure means and sealing means are in engagement with the plastic sheet.

3,847,712

BAG SEALING APPARATUS

Robert G. Hubbard, Overland Park, Kans., assignor to Dazey Products Company, Kansas City, Mo.

Filed Aug. 14, 1972, Ser. No. 280,458
Int. Cl. B30b *15/34*; **B44b** *5/00*; **H05b** *1/00*
U.S. Cl. 156—583 **12 Claims**



1. Apparatus for sealing the open end of plastic bags or the like, comprising:

a base;

an elongate member of heat-conductive material having a pair of differently configured surfaces, each of said surfaces being of length and configuration for continuous and uninterrupted spanning engagement with one side of a plastic bag or the like adjacent the open end thereof;

means rotatably mounting said member on said base for selective positioning of either of said surfaces in a disposition permitting said continuous, uninterrupted spanning engagement with said bag or the like;

means for heating said surfaces along the entire length thereof;

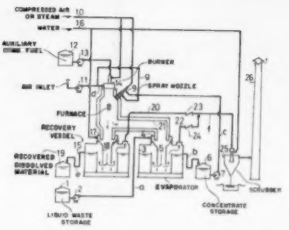
bag-engaging elongate pressure means at least as long as said bag-engaging lengths of said surfaces and shiftably mounted on said base for movement toward and away from the latter, said pressure means having a bag-engaging surface of generally planar configuration for continuous, uninterrupted spanning engagement with the other side of said bag or the like, oppositely to the zone of engagement between the latter and a selected one of said surfaces of said member.

3,847,713

METHOD AND APPARATUS FOR TREATMENT OF LIQUID WASTES

Mikio Akune, Yokosuka; Kokichi Yoshii, Shibukawa, and Tadashi Yamauchi, Kawasaki, all of Japan, assignors to Nittelsu Chemical Engineering Co., Ltd., Cheyoda-ku, Japan

Filed June 3, 1971, Ser. No. 149,667
Claims priority, application Japan, June 6, 1970, 45-48852
Int. Cl. B01d *1/14, 47/00, 1/16, 1/00*
U.S. Cl. 159—4 A **3 Claims**



1. A method for treating liquid waste, which comprises the steps of

a. providing a liquid waste containing a mixture of organic and inorganic or organo-metallic materials, said materials after complete combustion producing an alkalimetal containing ash;

b. concentrating said waste in an evaporator;

c. injecting and atomizing the thus concentrated waste into a vertical furnace through a spray nozzle at the upper portion of said furnace;

d. combusting said injected and atomized waste in said vertical furance at least above 800° C and above the fusionn temperature of the thus produced ash;

e. introducing combustion gases evolved from said vertical furnace into contact with boiling water in a recovery vessel to dissolve and recover said molten ash immediately in the form of solution or slurry;

f. passing combustion gases into said evaporator to utilize the heat contained in said combustion gases.

3,847,714

METHOD AND APPARATUS FOR HEAT TREATING LIQUEFORM MATERIALS

Elmer S. Davies, and Monte R. Edwards, both of Takoma Park, Md., assignors to Dasi Industries, Inc., Silver Spring, Md.

Filed June 15, 1972, Ser. No. 263,132
Int. Cl. B01d *1/16, 1/22*; **F26b** *3/12*
U.S. Cl. 159—4 A **5 Claims**

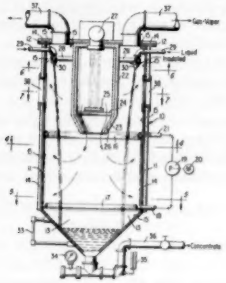
1. A method of heat treating liqueform materials to vaporize therefrom volatile constituents thereof which includes the steps of

a. forming without preheating a relatively thin, annular downwardly flowing curtain or predetermined height of said liqueform material within and surrounded by a vertically-positioned vessel having its inner wall spaced outwardly from the outer surface of said curtain to provide a space therebetween, and providing said vessel with a discharge opening at the upper portion thereof in communication with said space, and with a discharge opening at the bottom of said vessel;

b. projecting downwardly within the confines of the lower portion of said curtain and laterally through said curtain throughout the height thereof, the products of combustion from a burner and combustion chamber assembly mounted in the upper portion of said vessel coextensive with the upper portion of said curtain, and discharging the combustion products downwardly below the upper

end of the curtain and substantially above the lower end thereof, at a relatively high temperature sufficient to vaporize the volatile constituents of said curtain and at a relatively low pressure just sufficient to cause said products of combustion to traverse the height of said curtain but not to impinge with any substantial velocity upon non-volatile constituents in the bottom of the vessel;

c. discharging the vapors formed from the volatile constituents of said curtain from the space surrounding said curtain and through the discharge opening at the upper portion of said vessel and discharging the non-vaporized



remainder of said curtain of said liqueform material through the discharge opening at the bottom of said vessel;

d. retaining a relatively small amount of the unvaporized remainder of said liqueform material in the bottom portion of said vessel above said bottom discharge opening to form a liquid seal above said bottom discharge opening; and

e. insulating the burner and combustion chamber and concentrically spacing the burner and combustion chamber from the curtain to prevent preheating of the liqueform material before it is formed into a curtain.

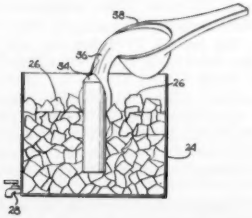
ERRATUM

For Class 160—240 see:
Patent No. 3,847,908

3,847,715
DECORATIVE CASTINGS AND METHOD OF FABRICATION THEREOF

Raymond F. Goodspeed, Garden Grove, Calif., assignor to Teledyne, Inc., d/b/a Teledyne Casting, Los Angeles, Calif.

Filed May 22, 1973, Ser. No. 362,930
Int. Cl. B22d *25/02*
U.S. Cl. 161—7 **13 Claims**

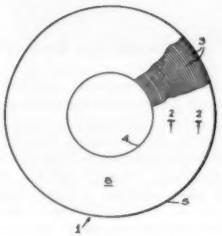


1. A method of casting decorative items comprising the steps of preparing a bed of pieces of ice, pouring molten metal onto said bed, and allowing said molten metal to solidify as it runs between said pieces of ice.

3,847,716
DOILY FOR REINFORCING THE WALL OF A FLEXIBLE WALLED LIQUID CONTAINER

Robert E. Dorsch, South Bend, Ind., assignor to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 179,290, Sept. 10, 1971, Pat. No. 3,750,730. This application Feb. 28, 1973, Ser. No. 336,669
Int. Cl. B37b *1/04;* **B65d** *41/00;* **D04h** *3/02*
U.S. Cl. 161—35 **9 Claims**

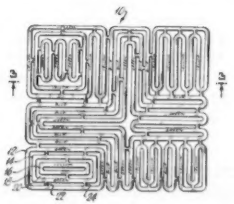


1. As an article of manufacture, a reinforcing doily adapted for use in reinforcing the wall of a flexible walled liquid container in the area surrounding a fitting, said doily comprising an annular sheet of curable but uncured polymeric material having a central opening and a plurality of closely adjacent substantially concentric annular turns of substantially inextensible reinforcing material disposed in the plane of said sheet.

3,847,717
ARMATURE FOR HAND-WEAVING AN ARTICLE OF A DEFINITE PATTERN OR DESIGN

Morton D. Kass, 31 Walkins Pl., New Rochelle, N.Y. 10801

Filed Aug. 7, 1972, Ser. No. 278,399
Int. Cl. B32b *3/10, 7/08*
U.S. Cl. 161—37 **13 Claims**



1. An armature formed in a pattern by:

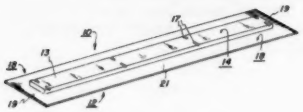
1. a plurality of members;
2. a plurality of channels separating adjacent members and adjacent portions of each member; and
3. a plurality of connectors integrally formed with said adjacent members and crossing said channels to join said adjacent members.

3,847,718

ADHESIVE BINDING MEANS FOR EDGE BINDING ASSEMBLED PAGES TOGETHER IN BOOK FASHION

Donald W. Watson, Arlington Heights, Ill., assignor to Xerox Corporation, Stamford, Conn.

Filed Nov. 1, 1971, Ser. No. 194,446
Int. Cl. B32b *3/10*; **B37b** *3/04*; **B42d** *3/02*
U.S. Cl. 161—39 **14 Claims**



1. Means for edge binding pages together in book fashion comprising:

a substrate of formable material, said substrate having a minimum width greater than the thickness of the book to be bound to permit said substrate to overlay not only the book end but also at least that portion of the outer pages of said book immediately adjoining said book end;

a first relatively thick heat activated low tack adhesive on one face of said substrate and substantially along the centerline thereof, said first adhesive being smaller in size than said substrate and arranged in a generally longitudinal stripe formation such that uncovered portions of said substrate project therebeyond at least along the sides of said first adhesive stripe;

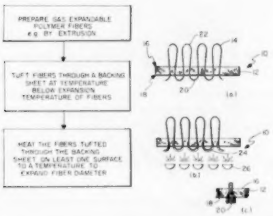
said first adhesive stripe being of a width sufficient to accommodate the thickness of the pages to be bound; and a second relatively thin adhesive on said substrate uncovered portions at least along each side of said first adhesive stripe whereby to form a pair of second adhesive stripe formations flanking said first adhesive stripe, said second adhesive consisting of a relatively high tack adhesive.

3,847,719

TUFTED CARPET WITH GAS-EXPANDABLE PILE AND METHOD

Richard P. Crowley, 23 Salem Road, Wellesley Hills, Mass. 02110

Continuation-in-part of Ser. No. 125,335, March 17, 1971, abandoned, which is a continuation-in-part of Ser. No. 25,275, April 12, 1970, Pat. No. 3,694,873, which is a continuation-in-part of Ser. No. 872,498, Oct. 30, 1969, Pat. No. 3,686,046. This application Dec. 26, 1972, Ser. No. 317,923
Int. Cl. D05c *15/04*
U.S. Cl. 161—65 **23 Claims**


PREPARE GAS EXPANDABLE POLYMER FIBERS e.g. BY EXTRUSION
TUFT FIBERS THROUGH A BACKING SHEET AT TEMPERATURE BELOW EXPANSION TEMPERATURE OF FIBERS
HEAT THE FIBERS TUFTED THROUGH THE BACKING SHEET ON LEAST ONE SURFACE TO A TEMPERATURE TO EXPAND FIBER DIAMETER

1. A product which comprises a backing sheet and a plurality of expanded cellular polymeric fibers secured to the backing sheet, the fibers providing a fibrous face surface, the fibers in the backing sheet secured thereto by the contact and the compression of at least a part of the outer surface of the cellular polymeric fibers against the material in the backing sheet.

3,847,720

UPHOLSTERY ARTICLES AND PROCESS FOR THEIR MANUFACTURE

Cesare Laberinti, Milan, Italy, assignor to Industrie Pirella S.p.A., Milan, Italy

Filed Dec. 8, 1970, Ser. No. 96,265
Claims priority, application Italy, Dec. 24, 1969, 26274/69
Int. Cl. B32b *3/26*
U.S. Cl. 161—159 **2 Claims**

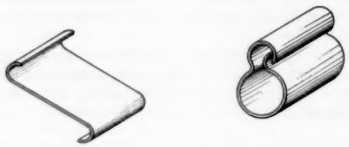
1. An upholstery article of expanded polyurethane molded in a shape of any desired configuration, constituted of an inner core of said polyurethane and of a preformed polyurethane skin which is mechanically resistant and which presents an appealing appearance, wherein said skin is microporous and is directly joined to said inner core by chemical bond, has cells uniformly distributed within its thickness in a fine cellular structure, said cells being for the most part not intercommunicating with one another, and having a diameter smaller than 0.02 mm, the visible surface of said skin being substantially continuous and waterproof and the value of the density range of said skin being between 0.4 and 0.8 g/cm^3, said skin being further characterized by having a pleasing softness to the touch and a thickness of no more than 3mm.

3,847,721

HEAT RECOVERABLE ARTICLES AND METHODS THEREFOR

Joseph H. Evans, Palo Alto, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Apr. 2, 1971, Ser. No. 130,730
Int. Cl. B32b *3/04*
U.S. Cl. 161—108 **14 Claims**



1. An article having a molecularly oriented unitary polymeric layer which has been differentially annealed while restrained against dimensional change by heating said layer at a temperature and for a time sufficient to provide an anisotropic gradient from a first to a second primary face of said layer through the thickness thereof and thereafter crosslinked chemically or by irradiation, the resulting crosslinked article being involutely heat recoverable to an overlapping, generally cylindrical configuration.

3,847,722

IMPREGNATED MATERIALS FOR LEAK PREVENTION

John F. Kistner, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

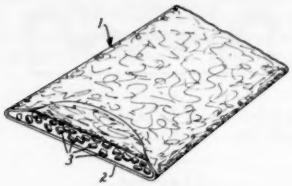
Filed Jan. 27, 1972, Ser. No. 221,295
Int. Cl. B32b *3/10*, *27/40*; **E02d** *37/00*
U.S. Cl. 161—109 **3 Claims**

1. A deformable, permeable substrate comprising expanded vermiculite enclosed in a non-woven web envelope, said vermiculite being impregnated with a hydrophilic prepolymer, said prepolymer being a water-miscible isocyanate-terminated prepolymer having a plurality of oxyethylene units and the formula:

$$Y_1—[(CH_2CH_2O)_o—CONH—R—(NCO)_p]_z$$

where Y_1 is an active hydrogen-free residue of a polyhydroxyalkane, $(CH_2CH_2O)_o$ is a hydrophilic polyoxyethylene chain, 0 is the number of oxyethylene units in said chain, 0 being

from about 15 to 50, R is an aromatic nucleus, *p* is an integer equal to *q*-1, where *q* is the number of isocyanate moieties of



a polyisocyanate precursor, and *z* is a number equal to the hydroxyl functionality of said polyhydroxyalkane.

3,847,723

FLAME RETARDANT BUTYL RUBBER

Eduard P. Babayan, Huntington Beach, Calif., assignor to Hitco, Irvine, Calif.

Filed Apr. 25, 1973, Ser. No. 354,257
Int. Cl. C08d *11/04;* **C08j** *1/36*
U.S. Cl. 161—160 **12 Claims**

1. A flame retardant, curable, elastomeric composition comprising in combination:

a liquid alkylene-diene copolymer;

an effective amount of a curing agent for the copolymer; and

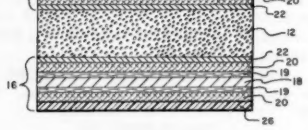
a combination of flame retardant agents comprising a combination of 10–40 parts of hexabromobenzene, 0–20 parts of a chlorinated paraffin containing 40–70 percent chlorine and 5–25 parts of antimony trioxide on the basis of 100 parts of said copolymer.

3,847,724

NON-BLOCKING FOAMED POLYMERIC LAMINATE AND METHOD

Thomas J. Powers, 17 Jana Drive, and Shelton J. Jones, 2709 Indian Mound Blvd., both of Monroe, La. 71201, assignor to Olinkraft, Inc., West Monroe, La.

Continuation-in-part of Ser. No. 253,051, May 15, 1972, abandoned. This application Feb. 20, 1974, Ser. No. 443,951
Int. Cl. B32b *3/26*
U.S. Cl. 161—161 **11 Claims**



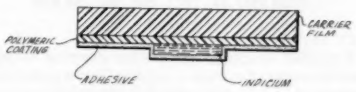
1. A fire resistant, non-blocking low density laminated structure comprising a polymeric foam core sandwiched between two layers of coated paper, each paper layer comprising an inner layer of metallic foil adhesively fixed to one side of the paper and an outer layer of metallic foil adhesively fixed to the other side of the paper and with the innermost layers of metallic foil being primed with an adhesive coating to promote adhesion to the polymeric core, the outermost side of one outer metallic foil being primed with a coating dissimilar from the outermost side of the other outer metallic foil, one of the outermost coatings comprising a vinyl chloride/vinyl acetate coating and the other of the outermost coatings comprising a nitrocellulose coating, the dissimilar outermost coatings functioning to allow similar laminated structures to be stacked on top of each other so that the dissimilar coatings are in juxtaposition thereby preventing the structures from adhering to each other.

3,847,725

DRY TRANSFER MATERIALS

Walter L. Hochner, Arcadia, Calif., assignor to Avery Products Corporation, San Marino, Calif.

Filed Nov. 28, 1969, Ser. No. 880,541
Int. Cl. C09j *7/02*
U.S. Cl. 161—167 **9 Claims**



1. A dry transfer material comprising a carrier sheet including a solvent-inert, substantially non-extensible, highly cross-linked polymeric surface, indicia forming a film printed on said surface, and a dry elastomeric pressure sensitive adhesive extending over the indicia and the polymeric surface.

3,847,726

VIBRATION-DAMPING SHEET METAL LAMINATES

Wilhelm Becker; Peter Osse, both of Hamburg; Richard Gutte, Oststeinbek, and Friedrich Hochbach, Glinde, all of Germany, assignors to Reichhold-Albert-Chemie Aktiengesellschaft, Hamburg, Germany

Filed Apr. 24, 1972, Ser. No. 246,921
Claims priority, application Switzerland, Apr. 23, 1971, 5926/71
Int. Cl. B32b *15/08, 27/38;* **C08j** *5/00*
U.S. Cl. 161—186 **8 Claims**

1. Vibration-damping sheet metal laminates prepared by a method which comprises applying to metal sheets at room temperature an adhesive composition comprising

a. an epoxy compound having more than one 1,2-epoxy group per molecule,

b. a poly-ether amine, which is the condensation product of
a polyoxypropyleneamine
a phenol and
an aldehyde,

c. a heterocyclic amine and

d. a phenol, then joining the sheets together and first curing at room temperature with subsequent heat treatment, wherein the adhesive composition contains 20–130 percent by weight of component (b), 1–40 percent by weight of component (c) and 2–15 percent by weight of component (d), all percentages being relative to the amount of component (a), with the proviso that the epoxy resin (a) and the curing agents (b), (c) and (d) are contained in an equivalent ratio.

3,847,727

RUBBER-METAL ADHESION USING HALOGENATED QUINONE AND RESORCINOL-ALDEHYDE CONDENSATION PRODUCT

Robert W. Kindle, Cheshire; Robert R. Barnhart, and Philip T. Paul, both of Naugatuck, all of Conn., assignors to Uniroyal, Inc., New York, N.Y.

Division of Ser. No. 131,470, April 5, 1971, Pat. No. 3,728,192. This application Jan. 22, 1973, Ser. No. 325,478
Int. Cl. B32b *15/02, 15/06*
U.S. Cl. 161—215 **7 Claims**

1. A laminate of a reinforcing element having a metal surface and a vulcanized rubber composition containing a halo-

genated quinone and a condensation product of resorcinol and an aldehyde selected from the group consisting of alkyl aldehydes having one to four carbon atoms and benzaldehyde.

3,847,728

RESINOUS COMPOSITIONS HAVING IMPROVED GAS PERMEATION RESISTANCE AND MOLDED STRUCTURES THEREOF

Sadao Hirata, Yokohama; Muneki Yamada, and Akira Kishimoto, both of Tokyo, all of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed May 31, 1972, Ser. No. 258,428

Int. Cl. B32b *27/08*

U.S. Cl. 161—252 **11 Claims**

1. A molded structure, said molded structure having been formed by means of extrusion molding from a molten mixture containing (A) a polyolefin and (B) a saponified product of an ethylene-vinyl acetate copolymer having an ethylene content of 25 to 50 mole percent and a degree of saponification of at least 96 percent at a weight ratio of A : B ranging from 95 : 5 to 75 : 25, said molded structure having a layer structure in which the polymer composition is different in the thickness direction but substantially identical in the plane direction and every two adjacent layers are bonded to each other without any intermediate bonding layer of an adhesive, said layer structure consisting essentially of (a) at least one layer in which the saponified ethylene-vinyl acetate copolymer is predominantly distributed, (b) at least one layer in which the polyolefin is predominantly distributed, and (c) at least one layer which comprises the saponified ethylene-vinyl acetate copolymer and the polyolefin in amounts substantially the same as the average content of the ethylene-vinyl acetate copolymer and the polyolefin of layers (a) and (b), said layer (c) intervening between said layer (a) and layer (b) to bond them integrally, said layer structure providing an improved gas permeation resistance, and wherein when said molded structure is divided in three layers in the thickness direction, at least one layer (a) contains the ethylenevinyl acetate copolymer saponified product in an amount expressed by following formula

$M_1 = m_1 X$

wherein X is the average content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said molded structure, m_1 is a number of from 1.2 to 4, and M_1 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer. and at least one layer (b) contains the ethylene-vinyl acetate copolymer saponified product in an amount expressed by the following formula

$M_2 = m_2 X$

wherein X is as defined above, m_2 is a number of from 0 to 0.9, and M_2 is the content (percent by weight) of the ethylene-vinyl acetate copolymer saponified product in said layer.

3,847,729

DEEP-DRAWABLE PLASTIC COMPOSITE COMPRISING PLASTIC FILM ON FIBROUS SUPPORT

Ludwig Hartmann, Oberflockenbach, Germany, assignor to Carl Freudenberg, Weinheim, Germany

Division of Ser. No. 514,026, Dec. 15, 1965, Pat. No. 3,523,149. This application Jan. 15, 1970, Ser. No. 3,129

Claims priority, application Germany, Dec. 23, 1964, 44788

Int. Cl. B29c *17/04*

U.S. Cl. 161—256 **11 Claims**

1. Deep-drawable composite comprising:

a. a plastic film of deep-drawable plastic,

b. a non-woven fleece consisting essentially of partially drawn and further drawable filaments which are drawable

upon deep-drawing of the plastic film,

c. said plastic film coating said fleece.

3,847,730

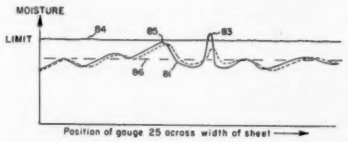
PEAK RESPONSIVE CONTROL SYSTEM AND METHOD

George I. Doering, Columbus, Ohio, assignor to Industrial Nucleonics Corporation, Columbus, Ohio

Continuation of Ser. No. 726,439, May 3, 1968, abandoned. This application Mar. 30, 1973, Ser. No. 346,295

Int. Cl. D21f *7/00*

U.S. Cl. 162—198 **17 Claims**



1. A system for controlling a property of an output of a sheet processor comprising gauge means monitoring the property for deriving a signal that is a replica of property variations of the output, means for scanning the gauge in a direction between edges of the sheet, means responsive to the signal replica for selecting the peak value of the property derived from at least one scan of the gauge means in a direction between the edges, said selected peak value being the peak value which is displaced by the greatest extent from a nominal value for the property over the scan, means responsive to said selecting means for controlling the processor in response to a comparison of the selected peak value with a predetermined limit value for the property so that the selected peak value is controlled to approach said limit value, said control means including means for controlling the processor by an amount indicative of the deviation of the selected peak value from the predetermined limit value.

3,847,731

TWIN WIRE PAPER MAKING METHOD IN WHICH CONTROLLED DEWATERING IN TAPERING GAP CAUSES SUSPENSION TO MOVE AT SPEED OF WIRES

Hanns F. Arledter, Andritzer Reichsstrasse 122, 8046 Graz St. Viet, Austria

Filed Nov. 12, 1971, Ser. No. 198,304

Claims priority, application Austria, Nov. 16, 1970, 10273/70

Int. Cl. D21f *1/00*

U.S. Cl. 162—203 **8 Claims**

1. A paper making method in which at at least 30% of the forming of a continuous sheet is effected by dewatering a fiber suspension in a tapered gap defined by a pair of traveling wires, the method comprising the steps of

a. establishing and maintaining, in a region adjacent the gap inlet, a volume of fiber suspension which is under pressure, has uniform consistency, and is in a turbulent state,

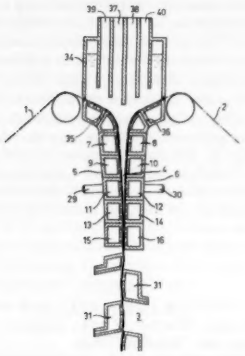
b. said pressure being such as to cause suspension to flow into the gap at the speed of the wires;

c. causing the wires to pass in contact with suspension in said region immediately before they define said gap;

d. withdrawing liquid from the suspension in said region

through each wire by suction to thereby cause deposition of fibers on the wires and effect partial formation of the sheet;

e. withdrawing liquid from the suspension in the gap through each of the wires by suction applied in each of a series of separate zones positioned along the path of travel of the wire, whereby the consistency of the suspension increases gradually as the suspension travels through



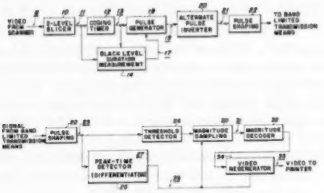
the gap and a sheet is formed therefrom between the two wires; and

f. setting the degree of suction dewatering effected in each zone so that the quantity of liquid in the suspension decreases from zone-to-zone in the direction of wire travel proportionally to the width of the gap, and the suspension is caused to move through the gap at essentially the speed of the wires and without being subjected to appreciable mechanical pressing by the wires.

3,847,732
SEMI-ENCODED FACSIMILE TRANSMISSION

Donald A. Perreault, Pittsford, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 6,869, Jan. 29, 1970, abandoned. This application Sept. 15, 1972, Ser. No. 289,510
Int. Cl. H04n *7/12*
U.S. Cl. 178—6 **14 Claims**



1. Apparatus for encoding a two-level non-synchronous video signal to achieve a reduced transmission time, without sacrificing resolution, given a limited bandwidth channel for said video signal, said apparatus comprising:

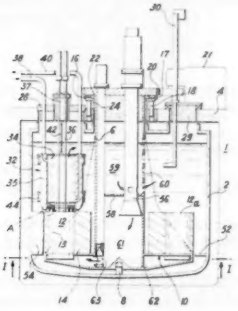
a. pulse generating means for supplying a train of pulses, each of said pulses corresponding to a transition of said video signal from a first level to a second level, each pulse in said pulse train occurring at a predetermined point in time relative to a corresponding one of said transitions; and

b. means for adjusting the amplitude of each of said pulses to be dependent on the interval of time separating the transition corresponding to said each of said pulses from the next succeeding transition of said video signal from said second level back to said first level.

3,847,733
NUCLEAR REACTOR WITH INTEGRATED HEAT EXCHANGER

Edmond Ventre, Le Vesinet, France

Filed July 13, 1971, Ser. No. 162,216
Claims priority, application France, Aug. 5, 1970, 70.28939
Int. Cl. G21c *15/00, 19/20*
U.S. Cl. 176—28 **9 Claims**



1. A nuclear reactor of the integrated heat-exchanger type comprising a leak-tight enclosure, a number of reactor cores disposed in a circle in said enclosure, a supporting platform for said cores, a fuel-handling device mounted above one of said cores in said enclosure, a heat-exchanger in said enclosure suspended above each of the others of said cores, a central column rigidly fixed to said enclosure, a system outside said enclosure for rotating said column about its axis and for rotating said reactor cores from a position beneath a heat-exchanger to a position beneath said fuel-handling device, vertical jacks supporting said column on said enclosure and for raising and lowering said platform and said reactor cores with respect to said heat-exchangers, fuel elements in said cores, heads for said fuel-elements, a neutron shield fixed beneath each of said heat-exchangers and opening through said shield receiving said heads when said platform is raised.

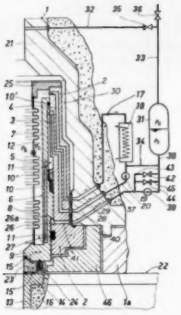
3,847,734
TUBULAR CONNECTOR ASSEMBLY OF A NUCLEAR REACTOR CHARGE MACHINE

Hans Schwarz, Nussbaumen, Switzerland, assignor to Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Mar. 21, 1972, Ser. No. 236,611
Claims priority, application Switzerland, Mar. 25, 1971, 4408/71
Int. Cl. G21c *19/22*
U.S. Cl. 176—31 **7 Claims**

1. A tubular connector assembly component of a charging machine for a nuclear reactor and which is adapted to be located on and movable over a platform of the reactor into alignment with and for connection to the ends of individual stand pipes for the purpose of exchanging fuel or moderator components which are introduced into the core of the reactor through the stand pipes, said tubular connector assembly comprising a cylinder, an annular piston including a crown and a skirt arranged for sliding movement into and out of one end of said cylinder, a cylindric open-ended bellows unit disposed concentric with and interiorly of said annular piston,

one end of said cylindric bellows unit being secured to said piston crown and the opposite end of said bellows unit being secured at the other end of said cylinder thereby to form an annular chamber between the bellows unit and the surrounding piston and cylinder wall, and means for admitting a pressurized fluid medium into said annular chamber to extend said bellows unit and advance said piston and to seat the annular crown thereof onto the end of a stand pipe thereby to establish



a charging passageway for the stand pipe leading through said open-ended bellows unit and the other end of said cylinder into the interior of said charging machine, said pressurized fluid medium admitting means including inlet and outlet ports to and from said cylinder, and a fluid circulating system connected to said ports, said circulating system including a pump and a heat exchanger for extracting heat from the fluid medium and which is transferred to the connector assembly from hot reactor cooling gas flowing therethrough.

3,847,735

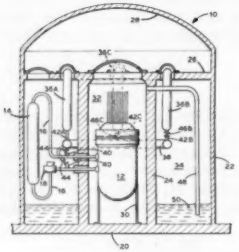
NUCLEAR REACTOR SAFETY SYSTEM

Donald C. Schluderberg, Lynchburg, Va., assignor to The Babcock & Wilcox Company, New York, N.Y.

Continuation of Ser. No. 53,753, July 10, 1970, abandoned. This application Dec. 12, 1972, Ser. No. 314,483

Int. Cl. G21c *15/18*

U.S. Cl. 176—38 **2 Claims**



1. In combination with a nuclear reactor, a pressurized primary coolant system comprised of a plurality of primary coolant loops operatively connecting the reactor to heat exchanger means, a containment structure housing said reactor, heat exchanger and coolant system, the improvement comprising an apparatus located within the containment structure for suppressing the buildup of vapor pressure therein including a plurality of tanks, a header operatively associated with the tanks, a cooling fluid being stored in said header and tanks, the header being disposed in open fluid communication with one of said tanks and in fluid receiving relation with the remaining tanks, each of the tanks containing a gas at superatmospheric pressure for pressurizing the fluid stored therein and in said header, the fluid pressure being different in each of the tanks and lower than the primary coolant operating pressure, the fluid pressure in said one tank and header being higher than that of the remaining tanks, a separate connector flow connecting each of the tanks to said header, a first check valve disposed in each of the connectors associated with the remaining tanks, said first check valve being normally closed by the fluid pressure in the header, a plurality of conduits flow connecting the header with said primary coolant loops, each of said conduits entering the system at a different location, a second check valve disposed in each of the conduits, said second check valve being normally closed by the primary coolant operating pressure, said second check valve becoming open when the primary coolant pressure decreases to the level corresponding to the fluid pressure in said one tank and header, and said first check valve becoming open when the primary coolant pressure decreases to the level corresponding to the fluid pressure in the tank associated therewith.

3,847,736

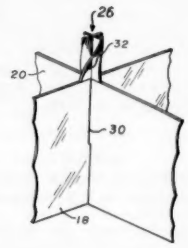
FLOW TWISTER FOR A NUCLEAR REACTOR

Frank Bevilacqua, Windsor, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Jan. 24, 1972, Ser. No. 220,213

Int. Cl. G21c *3/34*

U.S. Cl. 176—78 **9 Claims**



1. A grid structure for a nuclear reactor fuel assembly containing a plurality of elongated fuel elements each having a longitudinal axis and arranged in a generally parallel array with provision for a coolant flow along said elements, said grid structure comprising intersecting cross members intersecting at, and defining, cross member intersections and forming openings through which the fuel elements are adapted to extend and through which coolant flow in the reactor may pass, flow twisters integral with said grid structure at said intersections of said intersecting cross members and extending outwardly therefrom to a free end in a direction generally parallel to the longitudinal axis of said fuel elements, each twister comprising at least one tab having four outwardly extending arms with surfaces substantially extending from said cross member intersection to said free end, said tab having a cruciform cross section with a longitudinal centerline substantially parallel with the longitudinal axis of said fuel elements and being twisted about said longitudinal centerline to provide a plurality of spiral flow directing surfaces.

ERRATUM

For Class 178—6 see:
Patent No. 3,847,732

3,847,737

INACTIVATION OF MYXOVIRUSES AND METHOD OF PREPARING A VACCINE THEREFROM

Alexander David Kanarek, 183-193 Euston Rd., London, England

Continuation-in-part of Ser. No. 441,835, March 22, 1965, abandoned. This application June 11, 1968, Ser. No. 736,006

Int. Cl. C12k *7/00, 5/00*

U.S. Cl. 195—1.4 **7 Claims**

1. A method for inactivating myxoviruses without significant loss of antigenic activity, which comprises contacting the myxoviruses in an aqueous suspension at a PH between pH 6 and pH 8 in the presence of at least about 0.05 percent w/v of a surface active agent selected from the class consisting of polyoxyethylene sorbitan mono-oleate, polyoxyethylene ether of partial lauric acid ester, polyoxyethylene ether of palmitic acid ester, and polyoxyethylene ether of stearic acid ester which have molecular weights in the range of 1,200 to 1,320, with an organic solvent selected from the class consisting of chlorinated lower hydrocarbon having from 2 to 5 carbon atoms and chlorinated and fluorinated lower hydrocarbon having from 2 to 5 carbon atoms, the solvent being liquid at room temperature so as to form an organic layer and an aqueous layer, and separating the aqueous layer from the organic layer after a mixing time of about 1 hour.

3,847,738

BLOOD COLLECTION AND PRESERVATION UNIT

Jon M. Brake, Burbank, and Fred H. Deindoerfer, Northridge, both of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Nov. 1, 1971, Ser. No. 194,652The portion of the term of this patent subsequent to Nov. 12, 1991, has been disclaimed.

Int. Cl. A61k *27/00*

U.S. Cl. 195—1.8 **4 Claims**

1. A blood collection and storage unit, including container means having a storage volume for receiving and storing a corresponding volume of blood, and aqueous preservative solution means admixable with blood stored in said container means, wherein the improvement comprises having present in said preservative solution means for admixture with the stored blood an amount of dihydroxyacetone (DHA) equal to 5 to 100 millimoles (mM) of DHA per liter of said container storage volume.

3,847,739

CULTIVATION OF MICRO-ORGANISMS ON A FEEDSTOCK CONSISTING AT LEAST IN PART OF STRAIGHT CHAIN HYDROCARBONS

Alfred Champagnat, Courbevoise, and Bernard Maurice Laine, Lavern, both of France, assignors to The British Petroleum Company Limited, London, England

Continuation of Ser. No. 69,474, Sept. 3, 1970, abandoned, which is a continuation of Ser. No. 845,662, July 10, 1969, abandoned, which is a continuation of Ser. No. 546,607, May 2, 1966, abandoned. This application May 21, 1973, Ser. No. 362,063

Int. Cl. C12b *1/00*

U.S. Cl. 195—28 R **19 Claims**

1. A process which comprises cultivating a straight chain paraffinic hydrocarbon-consuming micro-organism in the presence of a feedstock consisting at least in part of a straight chain hydrocarbon, recovering a fraction comprising the micro-organism and at least some aqueous medium and residual hydrocarbon, mixing said fraction with a surface active agent and treating the mixture to recover (a) a washed fraction comprising the micro-organism together with an aqueous phase and some residual hydrocarbon fraction and (b) a hydrocarbon fraction of reduced content of straight chain paraffins or which is free of normal paraffins; the said washed fraction being treated by solvent extraction for the removal, at least in part, from the micro-organism of lipids together with hydrocarbons associated with said micro-organism.

3,847,740

PROCESS FOR THE PRODUCTION OF LEVULOSE-BEARING SYRUPS

Robert E. Heady, Park Forest, and William A. Jacaway, Jr., Downers Grove, both of Ill., assignors to CPC International, Inc., Englewood Cliffs, N.J.

Continuation-in-part of Ser. No. 294,397, Oct. 2, 1972,. This application Sept. 28, 1973, Ser. No. 401,757

Int. Cl. C12b *1/00;* **C12c** *11/33*

U.S. Cl. 195—31 F **22 Claims**

1. A stabilized xylose isomerase enzyme preparation comprising a cell free xylose isomerase enzyme sorbed on particulate basic magnesium carbonate.

3,847,741

TEMPERATURE-PROGRAMMED PROCESS FOR THE PRODUCTION OF LEVULOSE-BEARING SYRUPS

Robert E. Heady, Park Forest, and William A. Jacaway, Jr., Downers Grove, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Oct. 2, 1972, Ser. No. 294,397

Int. Cl. C12b *1/00*

U.S. Cl. 195—31 F **25 Claims**

1. An enzymatic isomerization process for the conversion of dextrose to levulose, comprising:

in an initial operating phase, subjecting a solution containing dextrose to the action of a xylose isomerase enzyme preparation at an operating temperature of at least 50° C., but not more than 70° C., then

increasing the temperature to a value that is at least 5° higher than the temperature during the initial operating phase, and continuing the isomerization process at said increased temperature.

3,847,742

PROCESS FOR DEACETOXYCEPHALOSPORIN C

Calvin E. Higgens, R.R. 1, Indianapolis, Ind. 46727, and Robert L. Hamill, RR I, New Ross, Ind.

Continuation-in-part of Ser. Nos. 247,608, April 26, 1972, abandoned, and Ser. No. 247,667, April 26, 1972, abandoned, and Ser. No. 247,668, April 26, 1972, abandoned, and Ser. No. 247,669, April 26, 1972, abandoned. This application Apr. 9, 1973, Ser. No. 348,341

Int. Cl. C12d *9/04*

U.S. Cl. 195—36 R **11 Claims**

1. A method for producing deacetoxycephalosporin C which comprises cultivating in an aqueous nutrient culture medium under submerged aerobic fermentation conditions a penicillin N producing microorganism belonging to the genera Cephalosporium, Emericellopsis, Scopulariopsis, Paecilomyces or Diheterospora until a substantial amount of deacetoxycephalosporin C is produced by said microorganism in said culture medium and isolating deacetoxycephalosporin C from said culture medium.

3,847,743

ENZYMES BOUND TO CARBONYL POLYMERS

Peter Salvatore Forgione, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

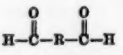
Division of Ser. No. 174,549, Aug. 24, 1971, Pat. No. 3,770,700. This application Jan. 12, 1973, Ser. No. 323,001

Int. Cl. C07g *7/02*

U.S. Cl. 195—63 **10 Claims**

1. A cross-linked polymer consisting essentially of the reaction product of (1) a sulfited aldehyde or ketone polymer

produced from a vinyl monomer and (2) a dialdehyde having the formula



wherein R is a $(CH_2)_x$ radical, x being 0–18, inclusive, an unsubstituted cyclic aliphatic group of 4–10 carbon atoms, inclusive, or an unsubstituted arylene group of 6–12 carbon atoms, inclusive, having a catalytically active enzyme covalently bound thereto.

3,847,744

METHOD OF PRODUCING ELASTASES BY BACTERIA

Isamu Shiio; Hachiro Ozaki, and Tsuyoshi Nakamatsu, all of Kanagawa, Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Filed Dec. 11, 1972, Ser. No. 313,816
Claims priority, application Japan, Dec. 14, 1971, 47-2719
Int. Cl. C12d *13/10*
U.S. Cl. 195—65 **2 Claims**

1. A method of producing elastase which comprises culturing an elastase-producing strain of *Flavobacterium immotum*, *Flavobacterium incertum*, or *Flavobacterium pulchlum* on an aqueous nutrient medium containing assimilable sources of carbon and nitrogen, inorganic salts and minor organic nutrients until elastase accumulates in said medium, and recovering the accumulated elastase.

3,847,745

PREPARATION OF WATER-INSOLUBLE BIOLOGICALLY ACTIVE MATERIALS

Rolf Axen, Upplands Ballinge; Per Vretblad, and Jerker Olof Porath, both of Uppsala, all of Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation of Ser. No. 98,027, Dec. 14, 1970, abandoned. This application Mar. 20, 1973, Ser. No. 343,183
Claims priority, application Sweden, Dec. 18, 1969, 17508/69; Apr. 8, 1970, 4781/70
Int. Cl. C07g *7/02*
U.S. Cl. 195—68 **3 Claims**

1. A method of preparing a water-insoluble biologically active polymeric material which comprises admixing in an aqueous medium at least three substances of which at least one is an insoluble organic, hydrophilic polymer and at least one other is a biologically active water-soluble organic substance and a third is an isonitrile group-containing compound, said biologically active water-soluble organic substance being selected from the group consisting of enzymes and hormones, said polymer being selected from the group consisting of cross-linked dextran, agarose, polyacrylamide, polymethylmethacrylate, and derivatives thereof, at least one of said at least three substances containing an anion, at least one of said at least three substances containing a primary or secondary amino group, at least one of said at least three substances other than said water-soluble organic substance containing aldehyde or ketone, reacting said at least three substances to form a said water-insoluble polymeric material wherein said water-soluble organic substance is coupled to said polymer by said isonitrile group-containing compound, and separating said water-insoluble polymeric material from the aqueous medium.

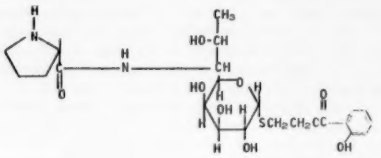
3,847,746

COMPOSITION OF MATTER AND PROCESS

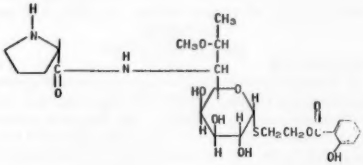
Alexander D. Argoudelis, Portage, and John H. Coats, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 261,724, June 12, 1972,. This application Dec. 13, 1973, Ser. No. 424,623
Int. Cl. C12d *9/00*
U.S. Cl. 195—80 R **5 Claims**

1. A process for preparing the antibiotic N-demethyl-7-0-demethylcelesticetin having the structural formula:



and the antibiotic N-demethylcelesticetin having the structural formula:



which comprises cultivating Streptomyces caelestis strain 22218*a*, having the cultural characteristics of culture deposit NRRL 5481, in an aqueous nutrient medium under aerobic conditions until substantial antibiotic activity is imparted to said medium by the production of N-demethyl-7-0-demethylcelesticetin and N-demethylcelesticetin.

3,847,747

PROCESS FOR PRODUCING CHLORAMPHENICOL ANALOGS

Takeo Suzuki; Fusao Tomita; Hirofumi Nakano, and Haruo Honda, all of Tokyo, Japan, assignors to Kyowa Hakko Kogyo Co., Ltd., Tokyo, Japan

Filed Apr. 3, 1973, Ser. No. 347,399
Claims priority, application Japan, Apr. 5, 1972, 47-33483
Int. Cl. C12d *13/00*
U.S. Cl. 195—96 **17 Claims**

1. A process for producing chloramphenicol analogs, which comprises culturing a bacterium capable of producing chloramphenicol analogs belonging to the genus *Corynebacterium* or *Nocardia* and having a resistance to chloramphenicol or its analogs in a nutrient medium and recovering the chloramphenicol analogs from the resulting culture liquor.

3,847,748

FERMENTATION METHOD AND APPARATUS

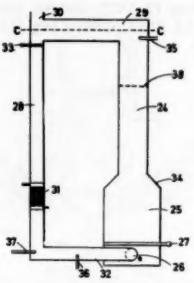
Malcolm Ritchie Gibson; Frank Cornelius Roesler; Stuart Raymond Leslie Smith, and Frank Peter Maslen, all of Norton, England, assignors to Imperial Chemicals Industries, Limited, London, England

Filed July 12, 1971, Ser. No. 161,787

Claims priority, application Great Britain, July 21, 1970, 35285/70

Int. Cl. C12b 1/14

U.S. Cl. 195—109 19 Claims



1. A method for the aerobic fermentation of a substrate by microorganisms capable of utilizing the substrate for growth, comprising the steps of continuously circulating fermentation medium comprising the substrate and microorganisms through a system having a compartment of ascending flow and a compartment of descending flow, connected at their upper and lower ends, admitting an oxygen-containing gas to the lower end of the ascending flow compartment to provide a hydrostatic pressure difference at the lower ends of the two compartments so as to cause said medium to circulate between two regions having different hydrostatic pressures, and controlling the velocity of the liquid circulation by sparging oxygen-containing gas to the upper part of the compartment of descending flow, the amount of gas thus admitted to said compartment of descending flow being less than the amount of gas admitted to said compartment of ascending flow, the gas admitted to said system being the sole essential means for stirring and circulating said medium and the dimensions of the system being such that in the ascending flow compartment the medium is transported continuously and rapidly between a lower region of higher hydrostatic pressure, in which oxygen is absorbed, and an upper region at a lower hydrostatic pressure, in which carbon dioxide produced during fermentation is desorbed, at a rate such that the carbon dioxide liquid phase partial pressure to which the microorganisms are subjected is within the range tolerable to the microorganisms.

3,847,749

APPARATUS AND METHOD FOR RAPID HARVESTING OF ROLLER CULTURE SUPERNATANT FLUID

Ralph E. Smith, and Frank E. Kozoman, both of Durham, N.C., assignors to Duke University, Inc., Durham, N.C.

Filed July 9, 1973, Ser. No. 377,806

Int. Cl. C12b 1/00

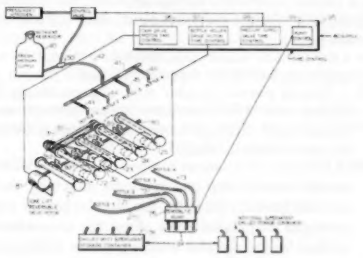
U.S. Cl. 195—127 4 Claims

1. In a roller tissue culture apparatus of the type having a plurality of parallel rollers, means to drive at least some of the rollers while others of the rollers are idled, a plurality of culture bottles adapted to be placed on the rollers and to be turned by the driven rollers and to in turn rotate the idled rollers, said bottles each having a swivel cap adapted to mount influent, effluent, and gas inlet-exhaust pipes, having a nutrient supply, piping connecting said nutrient supply to respective bottle influent pipes and with valve means to control the flow of said nutrient to said influent pipes whereby to control the flow of nutrient to said bottles, the improvement comprising:

a. tilting means provided below each of said bottles and operable to engage, gradually raise and tilt each of said bottles simultaneously in some predetermined angular amount while at least a portion of each of said bottles remains on its respective said rollers, being adapted to hold each of said bottles in said tilted position for some predetermined time and then to lower said bottles back to their normal position on said rollers;

b. electrical operator means connected to said tilting means for operating said tilting means and energizable in one mode to cause said tilting means to gradually raise and tilt said bottles, in another mode to cause said tilting means to hold said bottles tilted and in a third mode to cause said tilting means to gradually lower said bottles and restore said bottles to their normal position on said rollers;

c. a swivel cap like piping arrangement in each said bottle including an influent pipe connected to receive nutrient from said supply and to discharge the same through a section of said influent pipe within the respective said bottle, a gas inlet-exhaust pipe having one end communicating with the interior of said bottle and an opposite end



communicating with the environment external of the respective said bottle and having an effluent pipe with one end terminating proximate the forward end of the respective bottle and adjacent the interior surface thereof;

d. a plurality of effluent piping means connected to said respective said swivel cap effluent pipes at one end and to suitable chilled supernatant storage container means at the opposite end;

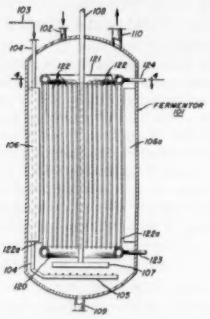
e. pumping means connected to and operative on said effluent drain pipes to pump fluids from said bottles to said storage container means; and

f. electrical timing control means connected to said operator means, said pumping means, said nutrient supply valve means and said roller drive means whereby said bottles once filled with a predetermined amount of said nutrient may be caused to be rotated for a predetermined time, be stopped, be tilted, be held in a tilted position, be drained of the supernatant fluids in said bottles, be replenished with said nutrient, be gradually lowered to the normal position on said rollers and then again be rotated on said rollers, to repeat the cycle on some predetermined sequence whereby the supernatant fluid and its contents in said bottles may be automatically harvested in said storage container means according to said sequence.

3,847,750
AEROBIC FERMENTATION APPARATUS

John A. Ridgway, Jr., LaPorte, Ind.; Terry A. Lappin, Palos Heights; Benny Moses Benjamin, Chicago, both of Ill.; Joseph B. Corns, Munster, Ind., and Cavit Akin, Oakbrook, Ill., assignors to Standard Oil Company, Chicago, Ill.

Division of Ser. No. 85,334, Oct. 30, 1970, abandoned. This application Mar. 7, 1973, Ser. No. 338,751
Int. Cl. C12b *1/00*
U.S. Cl. 195—142 3 Claims

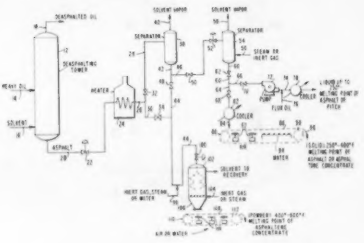


1. In a continuous aerobic fermentation apparatus, including a vertical cylindrical fermentor vessel, an internal cooling apparatus in combination therewith, said cooling apparatus comprising,
   a. a top circular header pipe disposed horizontally within an upper section of the fermentor vessel;
   b. a bottom circular header pipe, aligned axially with and having substantially the same mean diameter as the top header pipe, disposed horizontally within a lower section of the fermentor vessel;
   c. a plurality of connector pipes, disposed vertically in a spaced relationship and severally attaching the bottom circular header pipe to the top circular header pipe, being arranged in parallel rows along the circumference described by the circular header pipes in sufficient number to provide a total cross-section area substantially equal to the cross-section area of either of the header pipes;
   d. an inlet pipe, extending horizontally through the fermentor vessel wall in sealed relation thereto in the plane of the bottom header pipe and attached at one end to the header pipe;
   e. an exit pipe, attached at one end to the top circular header pipe and extending horizontally therefrom and passing through the fermentor vessel wall in sealed relation therewith; and
   f. pumping and compressing means located externally of the fermentor vessel and attached externally thereof to the extended ends of both the inlet pipe and the exit pipe, in order to provide a continuously flowing system for containment of coolant liquid and vapor phases, whereby efficient indirect heat exchange is effected with a fermentation liquor contained in the sections of the fermentor vessel and surrounding the internal cooling apparatus, so that a substantially constant temperature is maintained within the fermentation liquor throughout the course of the aerobic fermentation processing; and said fermentor vessel comprising,
      1. an air inlet and outlet means attached to the top section;
      2. an agitator means located directly below the bottom circular header pipe;
      3. an air sparger means attached to the air entry means within the bottom section and situated directly beneath the agitator means;
      4. a nutrient inlet means attached to the top section;
      5. a fermentation broth outlet means attached to the bottom section; and
      6. two vertical baffle means located along the interior wall of the vessel on either side of the internal cooling apparatus.

3,847,751
RECOVERY AND HANDLING OF ASPHALT CONTAINING A HIGH CONCENTRATION OF ASPHALTENE

Rino L. Godino, Livingston, and Oliver Morfit, Green Village, both of N.J., assignors to Foster Wheeler Corporation, Livingston, N.J.

Filed June 12, 1973, Ser. No. 369,338
Int. Cl. B01d *11/00*; C10g *21/00*
U.S. Cl. 196—155 2 Claims



1. An appratus for treating the mixture of asphalt and solvent leaving a deep deasphalting tower comprising:
   a heater for heating said mixture to at least approximately 600°F;
   a separator for separating solvent from said mixture;
   a spray tower for spraying asphalt through gas;
   a moving cooled surface for receiving the asphalt particles sprayed through said spray tower;
   a cooler;
   a second cooled belt for receiving asphalt; and
   conduit connecting said heater with said separator and said separator with said cooler;
   a second conduit path connecting said heater with said spray tower;
   a first valve in said first conduit path; and
   a second valve in said second conduit path;
   whereby when said first valve is closed, asphalt will flow from said heater to said spray tower where said asphalt will be separated into small particles and said solvent will separate from said asphalt into the form of vapor with said solidified particles falling onto said first cooled belt as powder or asphalt pellets having a high concentration of asphaltene and when said second valve is closed and said first valve is open, asphalt will flow through said separator and said cooler onto said first cooled belt to produce asphalt flakes high in asphaltene concentration.

3,847,752
AIR DIFFUSION IN ROTARY HEARTH CALCINER

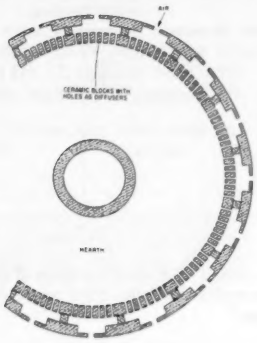
Thaddeus J. Oleszko, Hoeckstr. F, and Walter H. Groschel, Heckenbergstr. 46, both of 8263 Burghausen, Germany

Filed Sept. 27, 1972, Ser. No. 292,699
Int. Cl. C10b *21/20*
U.S. Cl. 201—32 5 Claims

1. In a method for operating a rotary hearth furnace in which combustible material containing volatiles is deposited on a hearth at a deposit point and is moved across said hearth to an exit point and wherein said volatiles are at least partially burned by contacting with air to form a combustion zone

within a furnace chamber at a temperature above the ignition point of the said volatiles, whereby heat is radiated from said combustion zone to said bed of material on said hearth, the improvement comprising in combination introducing said air through diffused outlets, in a substantially horizontal plane at an elevation substantially above the height of said hearth by:

a. introducing said air in an amount equivalent to from about



0.75 to about 1.25 times the amount necessary to oxidize said volatiles,

b. diffusing said air to a velocity of from about 1 to about 30 feet per second as measured within said furnace chamber about 2 feet in front of said outlets, and

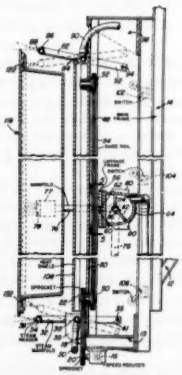
c. introducing said air within a substantially horizontal zone located from about 6 to about 36 inches above the top of said coke bed.

3,847,753

COKE OVEN DOOR AND JAMB CLEANERS

William R. Baird, Sturgis, and Kenneth O. Sutton, Morganfield, both of Ky., assignors to Saturn Machine & Welding Co., Inc., Sturgis, Ky.

Filed Mar. 2, 1973, Ser. No. 337,303
Int. Cl. C10b *43/04*; B08b *3/00*
U.S. Cl. 202—241 **4 Claims**



1. Apparatus for cleaning sealing surfaces of a door assembly for a coke oven, comprising, in combination:

a. first header means for cleaning sealing surfaces at a one end of a member to be cleaned;

b. second header means for cleaning sealing surfaces at another end of the member to be cleaned;

c. a carriage arranged for movement along a path between the first and second header means;

d. third header means mounted on the carriage for movement therewith;

e. means associated with the first, second, and third header means for swinging the first and second header means about respective pivots arranged perpendicularly to the path of movement of the carriage and parallel to the door assembly whenever the carriage is adjacent the first and second header means;

f. a frame having spaced ends, a guide rail mounted on the frame and arranged extending between the ends of the frame, the carriage arranged engaging the guide rail, and means for moving the carriage along the guide rail between the first and second header means, the first, second, and third header means being steam directing headers, the first and second header means being pivotally mounted on the frame adjacent respective ends thereof, and the path of movement of the carriage being a vertical linear path; and

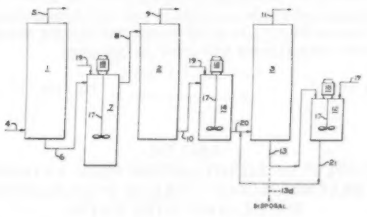
g. means actuated by the third header means for intermittently and alternately supplying steam to the first and second header means whenever the carriage is adjacent same.

3,847,754

RECOVERY OF GLYCOLS FROM MIXED GLYCOL COMPOSITION BY DISTILLATION WITH ACID TREATMENT

John M. Oliver, Vidor, Tex., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation-in-part of Ser. No. 60,592, Aug. 3, 1970, abandoned. This application Jan. 30, 1973, Ser. No. 327,901
Int. Cl. C07c *43/10*; B01d *3/34*
U.S. Cl. 203—34 **17 Claims**



1. A method of recovering monoethylene glycol, diethylene glycol and triethylene glycol from mixed glycol feed comprising monoethylene glycol, diethylene glycol and triethylene glycol, comprising distilling the mixed glycol feed to provide an overhead product of monoethylene glycol and a monoethylene glycol bottoms product of predominantly diethylene glycol and triethylene glycol, adjusting the pH of said bottoms product with acidic material to between about 6 and about 8.5, distilling under reduced pressure so-adjusted bottoms product to provide a diethylene glycol overhead product and a diethylene glycol bottoms product of predominantly triethylene glycol, adjusting the pH of said diethylene glycol bottoms product with acidic material to between about 6 and about 8.5 and distilling under reduced pressure so-adjusted bottoms to provide an overhead product of triethylene glycol.

3,847,755
SEPARATION OF DICHLOROBENZENE ISOMERS BY EXTRACTIVE DISTILLATION WITH AN APROTIC POLAR SOLVENT

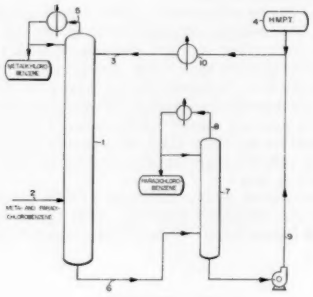
Rene Chanel, Pont De Claix; Bernard Alexandre, Claix; Jean-Claude Leroi, Villeurbanne, and Jacques Billion, Miribel, all of France, assignors to Rhone-Progil, Paris, France

Filed June 4, 1973, Ser. No. 367,009

Claims priority, application France, June 30, 1972, 72.24576

Int. Cl. C07c *25/08;* **B01d** *3/40*

U.S. Cl. 203—57 **8 Claims**



1. A process for separating paradichlorobenzene from metadichlorobenzene starting with a mixture of chlorinated benzenes including predominantly said paradichlorobenzene and metadichlorobenzene, comprising:

isolating metadichlorobenzene from said mixture by extractive distillation carried out by dissolving said mixture in at least one aprotic polar organic solvent selected from the group consisting of solvents having both a dielectric constant higher than 20 and a dipolar moment higher than 3.0 Debye, and withdrawing metadichlorobenzene as the distillate and paradichlorobenzene with said aprotic polar organic solvent as the bottoms; and

separating the paradichlorobenzene from said aprotic polar organic solvent by distillation, said paradichlorobenzene being withdrawn as distillate and said aprotic polar organic solvent being withdrawn as bottoms.

3,847,756
RECOVERY OF DIETHYL ETHER FROM AN OLEFIN HYDRATION PRODUCT STREAM BY EXTRACTIVE DISTILLATION WITH WATER

Max Statman, Longview, and Ralph E. Page, Jr., White Oak, both of Tex., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 9, 1972, Ser. No. 305,199

Int. Cl. B01d *3/10*

U.S. Cl. 203—92 **7 Claims**

1. A process for purification of diethyl ether which comprises:

1. feeding an impure stream comprising diethyl ether, ethyl alcohol, water, butene, secondary butanol and other impurities normally associated with crude diethyl ether into an extractive distillation column at a point about one-third of the way, in terms of theoretical distillation trays, up from the bottom of the column;

2. feeding a quantity of water about equal to from about 75 percent to about 300 percent of the quantity of the crude feed stream into the column at a point about two-thirds of the way, in terms of theoretical distillation trays, up the column from the bottom; and

3. recovering a substantially pure stream of wet diethyl ether from a point about five-sixths of the way, in terms of theoretical distillation trays, up the column from the bottom.

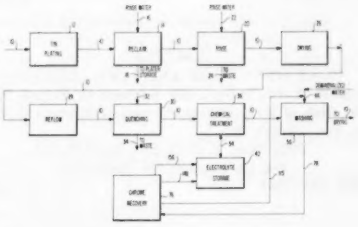
3,847,757
RECOVERING CHROMIUM VALUES FOR STABILIZATION OF TIN-PLATE SURFACES

Robert B. Smith, Crown Point, Ind., assignor to National Steel Corporation, Pittsburgh, Pa.

Filed June 4, 1973, Ser. No. 366,545

Int. Cl. C23f *13/00;* **C23b** *5/16;* **C01g** *37/00*

U.S. Cl. 204—40 **16 Claims**



1. Method of recovering hexavalent chromium from solution wetting tin plate surfaces after electrochemical treatment utilizing as an electrolyte an acidic aqueous solution comprising sodium dichromate, comprising the steps of

a. washing said surfaces to recover an aqueous solution containing cations and anions including anions containing hexavalent chromium;

b. treating aqueous solution recovered from said washing step with cation exchange resin in a cation exchange zone to replace cations with hydrogen ions to produce an aqueous effluent containing hydrogen ions and anions including anions containing hexavalent chromium;

c. treating said effluent with anion exchange resin in an anion exchange zone to replace anions with hydroxyl ions thereby recovering hexavalent chromium in the resin in said anion exchange zone and producing a demineralized water effluent;

d. regenerating the resin in said anion exchange zone to produce an effluent from said anion exchange zone comprising an aqueous solution containing sodium ions and anions containing hexavalent chromium;

e. treating effluent from step (d) with cation exchange resin

in a cation exchange zone to replace cations with hydrogen ions and produce an effluent and passing the produced effluent into an electrolyte storage zone;

f. passing effluent from step (d) into the electrolyte storage zone without an intermediate cation exchange treatment.

3,847,758

METHOD OF MANUFACTURING AN ELECTRODE SYSTEM

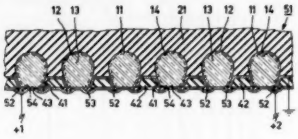
Ties Siebolt Te Velde, Emmasingel, Eindhoven, Netherlands, assignor to U.S. Phillips Corporation, New York, N.Y.

Filed Feb. 12, 1973, Ser. No. 331,993

Claims priority, application Netherlands, Feb. 19, 1972, 7202215

Int. Cl. C23b *5/48, 11/00;* **B01k** *5/02*

U.S. Cl. 204—15 **8 Claims**



1. A method of manufacturing an electrode system having a monograin layer, in which grains of a semiconductor material with enveloping layers and cores of opposite conductivity types are embedded in a layer of binder in a substantially monograin layer over a part of the layer thickness, a first electrode layer for contacting the enveloping layers of the grains is deposited on one side of the monograin layer with free grain surfaces, a material-removing treatment is used in which parts of the cores of the grains and parts of the enveloping layers of the grains are exposed, after which in a succeeding process step insulating material is provided on the exposed parts and a second electrode layer for contacting the cores of the grains is deposited, characterized in that in said process step the insulating material is selectively provided on the exposed parts of the enveloping layers of the grains and on edges of the exposed parts of the cores of the grains adjoining the junctions and parts of the cores of the grains not covered during the provision of the insulating material are then contacted by depositing the second electrode layer.

3,847,759

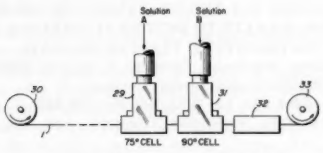
METHOD OF MAKING A MAGNETIC MEMORY DEVICE

Emil Toledo, Natick, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 93,333, Nov. 27, 1970, Pat. No. 3,736,576. This application Nov. 8, 1972, Ser. No. 304,692

Int. Cl. C23b *5/50, 5/58*

U.S. Cl. 204—28 **4 Claims**



1. The method of forming a magnetic coating comprising an alloy of iron-nickel-cobalt on a conductive substrate which has an anisotropic field characteristic adjacent the surface of said substrate which is substantially higher than the anistropic field characteristic of said coating adjacent the outer surface thereof comprising the steps of:

a. immersing said substrate in a plating electrolyte containing iron, nickel and cobalt salts and in which the cobalt salt concentration is sufficiently high to deposit an iron-nickel-cobalt alloy containing five percent or more of cobalt onto said substrate;

b. passing a plating current through said electrolyte to said substrate;

c. initially producing a flow of said electrolyte past the surface of said substrate at a first velocity;

d. subsequently producing a velocity of flow of said electrolyte past the surface of said substrate at a second velocity, said second velocity being greater than said first velocity and producing an iron-nickel-cobalt alloy coating comprising 5 percent or more cobalt having an anisotropic field characteristic on the order of 6 oersteds or higher deposited on said substrate during said initial period and a region of said coating having an anisotropic field characteristic of 4 oersteds or lower deposited on said substrate in the subsequent period.

3,847,760

METHOD OF IMPROVING THE CORROSION PROTECTION OF DECORATIVE CHROME PLATED ARTICLES

Thomas Paul Malak, Garfield Heights, Ohio, assignor to Kewanee Oil Company, Bryn Mawr, Pa.

Continuation of Ser. No. 150,922, June 8, 1971, abandoned. This application Jan. 18, 1973, Ser. No. 324,719

Int. Cl. C23f *17/00;* **C23b** *5/20*

U.S. Cl. 204—35 R **7 Claims**

1. The process of developing micropores in a layer of decorative chromium overlying a layer of conductive metal electrodeposited over a metallic or non-metallic article comprising

a. placing the article in a bed of solid particulate material, and

b. causing the particles in the bed to contact the surface of the chromium layer so as to develop at least 3000 micropores per square inch in said layer without causing appreciable visible dulling of the chromium.

3,847,761

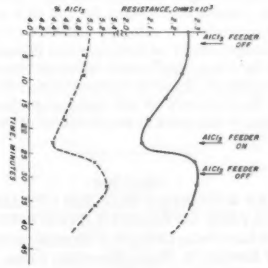
BATH CONTROL

Warren E. Haupin, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.

Filed Apr. 6, 1972, Ser. No. 241,607

Int. Cl. C22d *3/12*

U.S. Cl. 204—67 **10 Claims**



1. A method for operating a cell for the electrolytic production of aluminum from aluminum chloride which comprises: adding aluminum chloride to the cell in response to an increase in bath conductivity signifying a depletion of aluminum chloride in the cell whereby damage to the cathode by undesired electrolysis of other ingredients in the cell is avoided.

3,847,762

PROCESS USING SILICATE TREATED ASBESTOS DIAPHRAGMS FOR ELECTROLYTIC CELLS

Franklin Strain, Pittsburgh, Pa., assignor to PPG Industries Inc., Pittsburgh, Pa.

Filed Mar. 21, 1973, Ser. No. 343,600

Int. Cl. B01k 3/10; C01d 1/06

U.S. Cl. 204—98 6 Claims

1. In a method of conducting electrolysis in a diaphragm cell wherein a sodium chloride brine is fed into the anolyte chamber of said cell and the electrolyte within said anolyte chamber passes through a diaphragm of said cell to a catholyte chamber whereby a product containing sodium hydroxide and sodium chloride is recovered from said catholyte chamber, the improvement which comprises: depositing on an electrolyte permeable asbestos mat 0.01 to 5.0 grams per square foot of diaphragm of a water soluble silicate having the empirical formula

$$(Me_2O)_m(SiO_2)_n$$

where Me is chosen from the group consisting of lithium, sodium, and potassium, and the ratio of m to n is from about 1:1 to about 1:10, to a depth of at least 0.08 inch into said asbestos mat, contacting said diaphragm with an aqueous acidic media to convert said silicate to an amorphous, anolyte resistant, hydrated silica, and conducting electrolysis in said cell.

3,847,763

METHOD OF REDUCING WEAR OF A CEMENTED CARBIDE ROLL

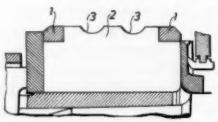
Tore Rolf Svensson, Hagersten; Kjell Erik Fundell, Danderyd; Karl Sven Gustave Ekemar, Saltsjo-Boo; Bengt Anders Lind, Alvsjo, and Udo Fischer, Vallinby, all of Sweden, assignors to Sandvik Aktiebolag, Sandviken, Sweden

Filed Jan. 23, 1973, Ser. No. 325,999

Claims priority, application Sweden, Jan. 31, 1972, 10452/72

Int. Cl. C23f 13/00; B01b 27/00

U.S. Cl. 204—148 2 Claims



1. Method of reducing the wear in a roll of cemented carbide during hot rolling of metal at very high speed and severe strain, which consists in providing the roll with electrochemical cathodic protection by using the available cooling water as electrolyte and, as anode, at least one ring formed of a metallic material having a significantly lower electrochemical potential than that of the cemented carbide, said ring being applied on the periphery of the roll and so formed that its outer diameter is the same as the diameter of the roll.

3,847,764

SECONDARY RECOVERY PROCESS UTILIZING BRINE ELECTROLYZED TO REMOVE HYDROGEN SULFIDE

Vernon H. Schievelbein; Leonard A. Shankle, both of Houston, Tex., and Herbert N. Wade, Riverside, Conn., assignors to Texaco Inc., New York, N.Y.

Division of Ser. No. 216,190, Jan. 7, 1972, Pat. No. 3,789,586. This application June 11, 1973, Ser. No. 368,809

Int. Cl. C02c 5/12

U.S. Cl. 204—149 1 Claim

1. A process for treating brine containing hydrogen sulfide which comprises subjecting the said brine to electrolysis to form sodium hypochlorite whereby reaction with the said hydrogen sulfide yields brine with a substantially reduced hydrogen sulfide content.

3,847,765

METHOD FOR THE TREATMENT OF CYANIDE-CONTAINING WASTES

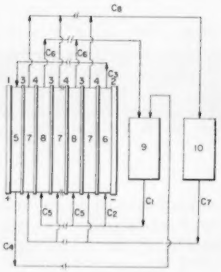
Taiko Uno, and Kohei Uosaki, both of Ibaraki-ken, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo, Japan

Claims priority, application Japan, Dec. 20, 1972, 47-127245; Japan, Dec. 20, 1972, 47-127246

Filed Dec. 4, 1973, Ser. No. 421,637

Int. Cl. C02c 5/12; B01d 13/02

U.S. Cl. 204—151 7 Claims



1. A method for the treatment of cyanide-containing wastes, which comprises passing a part of cyanide-containing waste from a cyanide-containing waste storage tank in series through a cathode compartment composed of a cathode and cation exchange membrane and an anode compartment composed of an anode and anion exchange membrane and then recirculating to the cyanide-containing waste storage tank, simultaneously passing the other part of cyanide-containing waste in parallel through a plurality of concentration compartments partitioned by a plurality of anion exchange membranes and cation exchange membranes arranged alternately and then recirculating to the cyanide-containing waste storage tank, and simultaneously passing a solution of an alkali metal chloride or alkaline earth metal chloride from an alkali metal chloride or alkaline earth metal chloride solution storage tank in parallel through a plurality of dilution compartments partitioned by a plurality of anion exchange membranes and cation exchange membranes arranged alternately and then recirculating to the alkali metal chloride or alkaline earth metal chloride solution storage tank.

3,847,766

PROCESSES FOR THE TREATMENT OF CRUDE CALCIUM SULFATE TO RENDER IT SUITABLE FOR CONVERSION TO PLASTER OF PARIS

Gerhard Klaus, Bad Grund, Germany, assignor to Fels-Werke Peine-Salzgitter GmbH, Goslar, Germany

Filed Apr. 12, 1973, Ser. No. 350,468

Claims priority, application Germany, Apr. 20, 1972, 2219223

Int. Cl. B01j 1/12; G01f 11/46

U.S. Cl. 204—157.1 S 3 Claims

1. A process for the treatment of a synthetic crude gypsum containing water-soluble phosphates and water-soluble silicofluorides to reduce its contents of such water-soluble phosphates and water-soluble silicofluorides before dehydration, which process comprises adding calcium hydroxide to the synthetic crude gypsum and thereafter subjecting the mixture to tribochemical treatment.

3,847,767

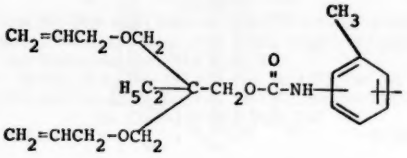
METHOD OF PRODUCING A SCREEN PRINTABLE PHOTOCURABLE SOLDER RESIST

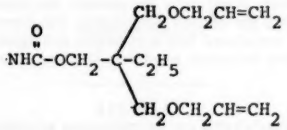
Harold A. Kloczewski, Pasadena, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 13, 1973, Ser. No. 340,870
Int. Cl. B01j 1/10; G03c 1/70
U.S. Cl. 204—159.14 1 Claim

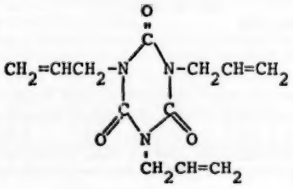
1. A process for preparing a screenable liquid photocurable solder resist ink from a low molecular weight photocurable composition which comprises admixing

1. a polyene selected from the group consisting of





, and



2. Up to 20 percent of a polythiol sufficient to react stoichiometrically with said polyene
3. 3 to 20 parts by weight based on the weight of (1) and (2) of silicone oil and
4. 0.05 to 10 parts by weight based on the weight of (1) and (2) of a photocuring rate accelerator, subjecting said admixture to actinic radiation at a dose of 0.0004 to 6.0 watts/cm.^{2} for a period sufficient to react substantially all of the polythiol present with a portion of the polyene whereby the viscosity of the irradiated admixture is increased and thereafter in the absence of actinic radiation adding additional polythiol to the irradiated admixture in an amount sufficient to cause at least 50 percent of the polyene based on the total initial unreacted content to react with said added polythiol thereby forming a screenable photocurable solder resist ink having a viscosity in the range of 5,000–200,000 centipoises.

3,847,768

RADIATION-CURABLE COATING COMPOSITION

Tsutomu Maruyama, Hiratsuka, Japan, assignor to Kansai Paint Company, Limited, Hyogo-ken, Japan

Filed June 4, 1971, Ser. No. 150,219
Claims priority, application Japan, June 8, 1970, 45-48699
Int. Cl. C08f 1/16, 27/00
U.S. Cl. 204—159.14 5 Claims

1. In a process of curing a coating composition containing a resin composition having ethylenically unsaturated bonds selected from the group consisting of unsaturated polyester resin, unsaturated acrylic resin, unsaturated epoxy resin and polybutadiene resin, by applying high energy ionizing radiation thereto at a dosage rate sufficient to cure the resin, the improvement which comprises employing as a radiation-cure accelerator from 1–40 percent by weight of at least one compound having the formula $M(NH_4)PO_4 \cdot nH_2O$ in said coating composition wherein M is an element selected from the group consisting of magnesium, calcium and strontium, and n is zero or a positive integer from 1 to 10, in admixture with said resin composition.

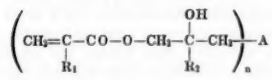
3,847,769

PROCESS FOR CURING HYDANTOIN-CONTAINING POLYACRYLATES WITH IONISING RADIATION

Peter Garth Garratt, Wallisellen; Juergen Habermeier, Pfeffingen; Daniel Porret, Binningen; Ernst Leumann, and Paul Zuppinger, both of Arlesheim, all of Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

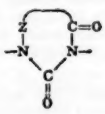
Filed Jan. 13, 1972, Ser. No. 217,669
Claims priority, application Switzerland, July 9, 1971, 10123/71
Int. Cl. C08d 1/00; C08f 1/16
U.S. Cl. 204—159.22 14 Claims

1. Process for curing polyacrylates by means of ionizing rays selected from accelerated electron rays in the dosage of from 0.5 to 7 Megarads and gamma radiation in the dosage of from 0,25 to 1.25 Megarads, said dosages producing nontacky films characterized in that compounds of the formula I



(I)

wherein R_1 and R_2 independently of one another each represent a hydrogen atom or the methyl group, n denotes the number 2 or 3 and A denotes an organic radical which contains at least one grouping



in which Z denotes a divalent radical which is required to complete a five-membered or six-membered, unsubstituted or substituted, heterocyclic ring, are irradiated.

3,847,770

PHOTOPOLYMERIZABLE COMPOSITIONS PREPARED FROM BETA HYDROXY ESTERS AND POLYITACONATES

Sol B. Radlowe, Chicago; Abraham Ravve, Lincolnwood, and Kenneth H. Brown, Chicago, all of Ill., assignors to Continental Can Company, Inc., New York, N.Y.

Division of Ser. No. 242,793, April 10, 1972, Pat. No. 3,804,735. This application Nov. 12, 1973, Ser. No. 424,150
Int. Cl. C08d *1/00*; C08f *1/16*
U.S. Cl. 204—159.23 16 Claims

1. An ultraviolet polymerizable printing ink comprised of a coloring compound in a vehicle comprised of

i. about 30 to about 55 percent by weight of a beta-hydroxy ester prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having 3 to 6 carbon atoms,

ii. 2 to 10 percent by weight of polyitaconate prepared from a reaction mixture comprised of a polyepoxide containing at least two reactive epoxy groups and itaconic acid,

iii. about 40 to about 70 percent by weight of a polyacrylate prepared from a polyhydric alcohol having 2 to 6 hydroxyl groups and an alpha, beta-ethylenically unsaturated monocarboxylic acid having 3 to 6 carbon atoms and

iv. about 0.1 to about 5.0 percent by weight of a photosensitizer.

3,847,771

UV AND LASER CURING OF PIGMENTED POLYMERIZABLE BINDERS

Vincent Daniel McGinniss, Middleburgh Heights, Ohio, assignor to SCM Corporation, Cleveland, Ohio

Filed Mar. 30, 1973, Ser. No. 346,351
Int. Cl. C08d *1/00*, *1/16*; C08f *1/20*, *29/00*, *45/02*, *45/66*
U.S. Cl. 204—159.24 6 Claims

3. An ultraviolet, photopolymerizable pigmented binder system for use an an opacified film, comprising:

a pigmented binder system comprising opacifying pigment and ethylenically unsaturated binder wherein said pigmented binder system contains about 0.05 to 2 weight parts of opacifying pigment per 1 weight part of said ethylenically unsaturated binder;

said binder system containing by weight about 0.5% to 3% of 2,2'-dithiobis-(benzothiazole), 0.1% to 2% of an aromatic carbonyl compound selected from the group consisting of aromatic amino ketone and aromatic phenyl ketone, and at least 0.5% of an aromatic photosensitizer selected from the group consisting of aromatic aldehydes and aromatic ketones different from said aromatic carbonyl compounds.

3,847,772

SELECTIVE ELCTRODIALYSIS OF CATIONS

Toshikatsu Sata; Masakatsu Nishimura, both of Tokuyama, and Ryuji Izuo, Kudamatsu, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

Filed May 21, 1973, Ser. No. 362,455
Claims priority, application Japan, May 22, 1972, 47-49871
Int. Cl. B01d *13/02*
U.S. Cl. 204—180 P 8 Claims

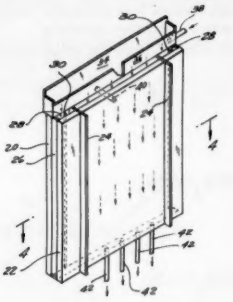
1. In a method of electrodialyzing seawater containing two or more classes of cations of differing valences, using a cation-exchange membrane, the improvement which comprises using a cation-exchange membrane in which a cationic substance has been caused to be present on and near the surface thereof and adjusting the pH of the seawater to a range of from about 2.5 to 8.0, thereby to selectively electrodialyze the cations of lower valence.

3,847,773

METHOD AND APPARATUS FOR CURTAIN ELECTROPHORESIS

Lloyd R. Snyder, Yorktown Heights, N.Y., assignor to Technicon Instruments Corporation, Tarryton, N.Y.

Filed June 11, 1973, Ser. No. 369,016
Int. Cl. B01k *5/00*
U.S. Cl. 204—180 R 4 Claims



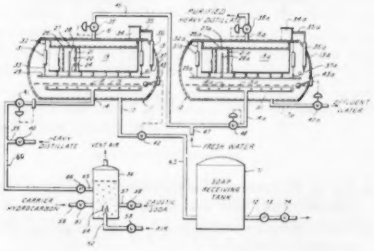
1. In a method of curtain electrophoresis, wherein a sample is introduced into a sheathed curtain of buffer solution in an electric field for separation of at least one sample constituent by differential migration, which constituent forms a sample band laterally displaced with reference to the remainder of the sample when exiting from the curtain; the improvement of deenergizing the electric field during the interval that the sample is introduced into the curtain and again during the interval that the sample band exits from the curtain.

3,847,774

PURIFICATION OF PETROLEUM DISTILLATES CONTAINING NAPHTHENIC ACIDS

William Grant Jarrell, Bellaire, Tex., assignor to Petrolite Corporation, St. Louis, Mo.

Filed June 22, 1973, Ser. No. 372,726
Int. Cl. B03c *5/00*
U.S. Cl. 204—190 10 Claims



1. A process for purifying a heavy petroleum distillate containing naphthenic acids comprising:

a. providing a carrier hydrocarbon substantially free of soap-producing quantities of naphthenic acids and compatible with the heavy petroleum distillate;

b. dispersing an aqueous alkali metal hydroxide into the carrier hydrocarbon wherein said aqueous alkali metal hydroxide resides within the carrier hydrocarbon as a uniform dispersion of fine droplets in a hydrocarbon-continuous emulsion;

c. introducing a first stream of the heavy petroleum distillate and a second stream of the carrier hydrocarbon from

step (b) into a common conduit;

d. passing the first and second streams from the common conduit through a mixing means for dispersing the carrier hydrocarbon uniformly throughout the first stream of heavy petroleum distillate containing naphthenic acids; and

e. subjecting the first and second streams, immediately after mixing, and before any significant phase separation occurs, to an electrical field to separate a purified heavy hydrocarbon distillate phase from an aqueous mixture of excess alkali metal hydroxide and the alkali metal hydroxide salts of naphthenic acids, and said purified heavy hydrocarbon distillate stream containing the carrier hydrocarbon.

3,847,775

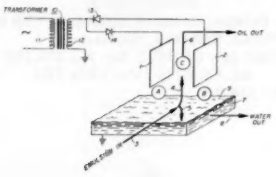
PROCESS FOR ELECTRICAL COALESCING OF WATER

Floyd L. Prestridge, Tulsa, Okla. 74101, assignor to Combustion Engineering, Inc., New York, N.Y.

Division of Ser. No. 197,400, Nov. 10, 1971, Pat. No. 3,772,180. This application Feb. 20, 1973, Ser. No. 333,903

Int. Cl. B01d *13/02*; **B03c** *5/02*

U.S. Cl. 204—191 **5 Claims**



1. A process for coalescing water which is dispersed in the form of droplets throughout a second liquid, including,

passing a mixture of a liquid and water droplets dispersed throughout the liquid through an electrostatic field,

generating the electrostatic field with two sources of D.C. voltages, each source being periodically applied to one of two spaced electrodes,

forming a body of water droplets coalesced by the electrostatic field and gravitated below the electrodes,

withdrawing water from the body while maintaining a predetermined level for the body below the electrodes,

connecting the body to the reference common to the two sources,

and withdrawing from the field the liquid from which the water droplets are gravitated.

3,847,776

METHOD OF PREPARING A PATTERN OF A LAYER OF REFRACTORY METAL BY MASKING

Bernard Bourdon, Gometz-le-Chatel; Claudy Duong, Breuillet, and Pierre Coppier, Cachan, all of France, assignors to Societe Generale de Constructions Electriques et Mecaniques (Alsthom), Paris, France

Filed Mar. 1, 1972, Ser. No. 230,929

Claims priority, application France, Mar. 5, 1971, 71.07862; Dec. 6, 1971, 71.43790

Int. Cl. C23c *15/00*

U.S. Cl. 204—192 **15 Claims**

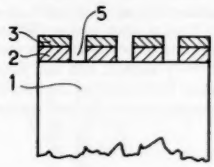
1. A method of preparing a pattern of a layer of refractory metal on a substrate by masking, comprising:

applying the refractory metal on the substrate as a continuous layer;

covering the continuous layer of refractory material with a continuous protective layer of a material substantially more resistant to ion bombardment than said refractory metal;

photolithographically applying a mask on said protective layer corresponding to said pattern;

chemically etching said protective layer with an etchant to which said refractory metal is resistant, to expose said refractory metal in selected areas;



exposing said refractory metal and said protective layer to ion bombardment in an ionized gaseous medium to remove said refractory metal in said selected areas, and dissolving the remainder of said protective layer with a reagent which is inert with respect to the underlying refractory metal.

3,847,777

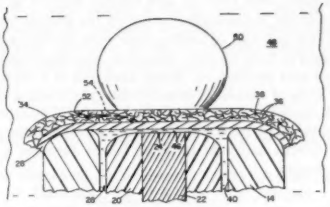
ELECTROCHEMICAL ANALYZER

Ihsan A. Haddad, Bedford, and William M. Krebs, Waltham, both of Mass., assignors to Instrumentation Laboratory, Inc., Lexington, Mass.

Filed May 8, 1972, Ser. No. 251,287

Int. Cl. G01n *27/46*

U.S. Cl. 204—195 P **15 Claims**



1. An electrochemical analyzer comprising:

two electrodes spaced apart from each other,

an electrolyte in the space between said electrodes, and a composite membrane structure over the surface of one of said electrodes, said composite structure having a surface area substantially larger than the area of said surface of said electrode and comprising

a selectively permeable layer separated from said electrode surface by a thin layer of said electrolyte,

and a layer of hydrophobic material in overlying engagement with said selectively permeable layer, said layer of hydrophobic material having porosity that allows substantially unimpeded gaseous flow in both the lateral and longitudinal directions.

3,847,778

AIR-FUEL RATIO SENSOR

John W. Riddel, Fenton, Mich., assignor to General Motors Corporation, Detroit, Mich.

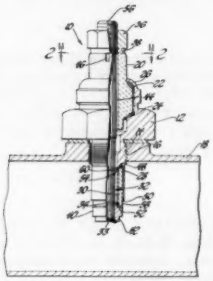
Filed Nov. 26, 1973, Ser. No. 418,824

Int. Cl. G01n *27/46*; **F02m** *7/00*

U.S. Cl. 204—195 S **2 Claims**

1. An exhaust gas sensor for measuring the relative presence of oxygen in the exhaust gas comprising: a hollow outer metal shell having a body section that is adapted to be mounted in

an exhaust system, insulator means secured within said hollow metal shell, said body section having a shoulder thereon that is adapted to hold one end of a hollow cylindrical zirconia cell in fixed position, fastener means that includes a bolt portion also having a similar shoulder thereon in alignment with the shoulder on said body section to hold the other end of the zirconia cell, said fastener means extends through said zirconia cell, said insulator means, and said hollow outer metal shell, and is held in fixed position against the top of said insulator means by a securing means to create a seal between said zirconia cell, said body section, and said fastener means to prevent exhaust gases from entering the interior of the zirconia cell, the bolt portion of said fastener means being smaller

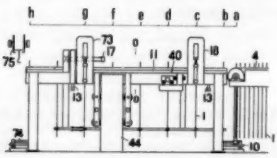


in diameter than the inside diameter of said insulator, said outer shell, and said zirconia cell, to permit air to enter into said zirconia cell from an opening in said insulator means, said zirconia cell having a platinum coating on the inside surface and extending over onto an end surface thereof to form an inner electrode, a platinum coating on the outside surface of said zirconia cell and extending over onto the other end surface thereof to form an outer electrode, the inside and outside surface of said zirconia cell being uncoated at a section adjacent the ends of said zirconia cell to thereby insulate the inner electrode from the outer electrode, one of said electrodes and said metal shell forming a first contact means and the other of said electrodes and said fastener means forming a second contact means.

3,847,779
AUTOMATIC APPARATUS FOR STRIPPING DEPOSITED METAL FROM A CATHODE PLATE IN ELECTROWINNING PROCESS

Kunio Sekine; Yukio Kamata, and Yoshio Yamaishi, all of Kosaka-machi, Japan, assignors to The Dowa Mining Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1972, Ser. No. 301,219
Int. Cl. B65g *49/00*
U.S. Cl. 204—198 **8 Claims**

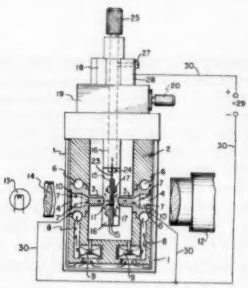


1. Apparatus for stripping deposited metal from a cathode plate in an electrolytic metal winning process comprising: a cathode plate of the type having a cathode holder mounted thereon; means for advancing said cathode plate to a plurality of operating stations, said advancing means including a device movable between an elevated position and a lowered position which slidably reciprocates to a distance corresponding to the distance between any two stations, said device releaseably carrying said cathode plate when in said elevated position and releasing said cathode plate at one of said operating stations when brought to said lowered position, and means for holding said cathode plate at said operating station against lateral and downward movements; means at one operating station for turning said cathode holder to expose an edge portion between said cathode plate and the deposited metal; preliminary stripping means located at another station, said preliminary stripping means having scraper elements insertable between said cathode plate and the deposited metal at said edge portion to partially separate said deposited metal from said cathode plate; and a main stripping means located at another station, said main stripping means having a scraper blade insertable between the partially separated cathode plate and deposited metal and movable relative to said cathode plate and deposited metal to effect complete separation of said deposited metal from said cathode plate.

3,847,780
DEVICE FOR THINNING TECHNICAL AND MICROSCOPIC SPECIMENS UNDER LAMINAR FLOW CONDITIONS

Peter Burck, Dresden, Germany, assignor to VEB Rathenower Optische Werke, Rathenow, Germany

Filed July 24, 1972, Ser. No. 274,752
Int. Cl. B23p *1/04*; **B08b** *3/02*
U.S. Cl. 204—224 R **14 Claims**



1. A device for selective chemical and electrochemical thinning of respective non-metallic and metallic, technical and microscopic specimens under laminar flow conditions of the applied electrolyte, the device having at least one jet nozzle directed toward the specimen so as to apply the electrolyte to its surface to be thinned and optionally perforated, the specimen being held in at least one mask, the device comprising, in combination, a wide-lumen jet tube associated with each said at least one jet nozzle, a central jet space being provided in an area adjoining said mask and tapering inwardly in the direction of exit of said jet tube, an annular channel surrounding said jet space, at least four symmetrically disposed overflow channels between said annular channel and the associated jet space, and pump means for conveying the electrolyte to said annular channel, by the intermediary of a supply channel, the arrangement of said annular channel and said at least four overflow channels between said at least one jet nozzle and said pump means providing means for producing controlled laminar flow of the electrolyte, with the absence of a direct supply between said at least one jet nozzle and said pump means

making for the laminar flow conditions without drift and turbulence.

3,847,781

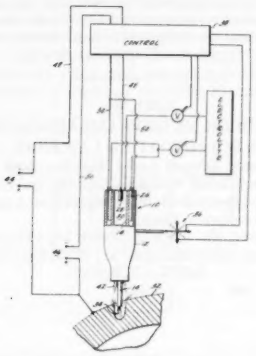
APPARATUS FOR ELECTROLYTIC MATERIAL REMOVAL

Guy Bellows, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Division of Ser. No. 245,374, April 19, 1972, Pat. No. 3,764,510. This application May 25, 1973, Ser. No. 364,087

Int. Cl. B23p *1/04*; B01k *3/04*

U.S. Cl. 204—224 M 3 Claims



1. Apparatus for removing material electrolytically from a conductive workpiece, the apparatus including electrical power supply means, electrolyte supply means to supply electrolyte between the electrodes and the workpiece and positioning means to position a cathode-tool in opposed relationship with the workpiece, comprising:

a cathode-tool comprising:

a. inner and outer electrolyte guide members, each having walls defining a hollow interior, and electrolyte inlet and an electrolyte discharge port;

b. the inner member being smaller than the outer member, having dielectric walls and located within the hollow interior of the outer member in spaced apart relationship to define therebetween an electrolyte passage;

c. the electrolyte discharge ports of the members being located to discharge electrolyte in substantially the same direction;

d. a radiusing electrode in the electrolyte passage; and

e. a cutting electrode in the hollow interior of the inner member;

f. the radiusing and cutting electrodes being electrically isolated one from the other;

means to supply power from the electrical supply means independently to the radiusing electrode and to the cutting electrode so that each of such electrodes is cathodic with respect to the workpiece when power is applied, the electrical power to the cutting electrode being sufficient to create in the electrolyte between the cutting electrode and the workpiece a condition at least of incipient glow; and

control means to schedule the supply of power independently to each electrode so that the radiusing electrode is activated in timed relationship to the cutting electrode.

3,847,782

BUSBAR SYSTEM FOR ELECTROLYSIS CELLS

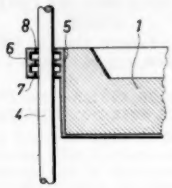
Erno Kolosy, Budapest, Hungary, assignor to Aluterv Aluminiumipari Tervezo Vallalat, Budapest, Hungary

Filed Mar. 4, 1970, Ser. No. 16,429

Claims priority, application Hungary, Mar. 24, 1969, AU 213

Int. Cl. C22d *1/02*, *3/02*

U.S. Cl. 204—267 2 Claims



1. In a busbar system including a plurality of crosswise disposed electrolysis cells juxtaposed in a row, each of said cells having an anode and a cathode disposed below the anode, and electrical connecting means, the improved electrical connecting means comprising electrical conductors electrically connecting the cathode of each electrolysis cell to the anode of an adjacent electrolysis cell of said plurality of crosswise juxtaposed cells, each of said conductors having a section located below the cathode and following a straight line in a horizontal projection, at least three of said conductors being arranged on each side of each cathode, each of said electrical connecting means being formed in its full length of a single coherent flexible piece which consists of several components that are clamped together into several bundles, each cathode including a shell having a flange portion having openings corresponding in number to the number of connecting means at each cell, each one of said connecting means extending through an opening in said flange portion.

3,847,783

ELECTROLYTIC CELL AND METHOD OF ASSEMBLING SAME

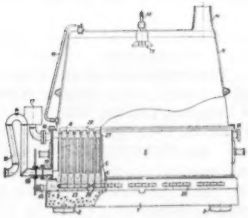
Umberto Giacopelli, I - Rosignano-Solvay/Livorno, Italy

Filed Mar. 15, 1973, Ser. No. 341,764

Claims priority, application Belgium, Mar. 20, 1972, 115282

Int. Cl. B01k *3/00*

U.S. Cl. 204—275 15 Claims



1. An electrolytic cell comprising a plurality of cathodes alternating with a plurality of generally vertical metal anode plates over a pedestal, said anode plates having each coated thereon an active layer containing a platinum group metal or metal compound, current supply means to said anode plates, comprising an array of generally horizontal metal bars, each bar extending between the lower ends of a neighboring pair of

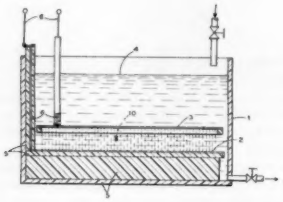
anode plates, and clamping means to clamp said anode plates and metal bars together to form an anode assembly, said metal bars, lower ends of the anode plates and clamping means being embedded and sealed in a monolithic mass of electrically and thermally non-conducting rigid material, whereby said mass forms at least part of the aforesaid pedestal and retains the anode plates vertically and laterally.

3,847,784

POROUS CADMIUM ANODE AND A METHOD OF FORMING IT, AND A PRIMARY CELL USING THE ANODE

Franciszek Przybyla, Toronto, Ontario, Canada, assignor to Mallory Battery Company of Canada Limited, Clarkson, Ontario, Canada

Filed July 28, 1972, Ser. No. 276,216
Int. Cl. B01k *3/06;* **C23b** *5/48*
U.S. Cl. 204—292 **6 Claims**



1. A method of forming an anode consisting essentially of cadmium powder of improved electrochemical activity, wherein the cadmium powder is in the form of needles and dendrites and is of substantially uniform particle size, said method comprising the steps of:

electrodepositing a cadmium powder from a solution containing cadmium ions in a concentration ranging from 0.05 to 0.18 gram ions per liter of Cd^{++} dissolved in a supporting electrolyte, said solution disposed above a horizontal anode and a horizontal collecting cathode, said anode parallel to said cathode;

increasing the cathodic deposition current density at said horizontal collecting cathode from a minimum value of not less than eighty milliamperes per square centimeter to a maximum value of not more than 400 milliamperes per square centimeter during a predetermined interval of deposition;

collecting and washing said cadmium powder; and

applying sufficient pressure to said cadmium powder at ambient temperature to form a porous self-supporting cadmium anode, of from 55 percent to 80 percent porosity.

3,847,785

ELECTROPHORESIS APARATUS

William B. Allington, Lincoln, Nebr., assignor to Instrumentation Specialties Company, Lincoln, Nebr.

Filed Feb. 14, 1972, Ser. No. 226,016
Int. Cl. B01k *5/00*
U.S. Cl. 204—299 **23 Claims**

1. Apparatus for electrophoresis of a mixture of different molecular species comprising:

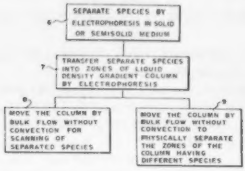
a first anticonvection medium;

a second anticonvection medium;

electric means for substantially separating by electrophoresis at least some of said different molecular species in said first anticonvection medium and for moving said separated molecular species by electrophoresis into said second anticonvection medium;

said second anticonvection medium differing from said first anticonvection medium at least by being more capable of bulk flow, whereby the collection of the separated molecular species is facilitated;

scanning means for locating said different molecular species in said second anticonvection medium; and


SEPARATE SPECIES BY ELECTROPHORESIS IN SOLID OR SEMISOLID MEDIUM
TRANSFER SEPARATE SPECIES INTO ZONES OF LIQUID DENSITY GRADIENT COLUMN BY ELECTROPHORESIS
MOVE THE COLUMN BY BULK FLOW WITHOUT CONVECTION FOR SCANNING OF SEPARATED SPECIES
MOVE THE COLUMN BY BULK FLOW WITHOUT CONVECTION TO PHYSICALLY SEPARATE THE ZONES OF THE COLUMN HAVING DIFFERENT SPECIES

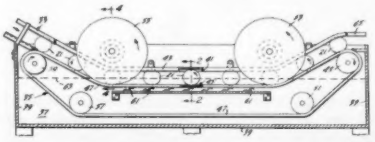
conduit means communicating with the bottom of said second anticonvection medium for introducing a movable support means to move said second anticonvection medium with respect to said scanning means.

3,847,786

ROLL-THROUGH METHOD AND APPARATUS FOR ELECTROCOATING CAN ENDS

LeRoy Landauer; Edward Leroy Blakslee, both of Crystal Lake; Benjamin Ichak Abraham, Chicago, and Gilbert Stieglitz, Trout Valley, all of Ill., assignors to American Can Company, Greenwich, Conn.

Division of Ser. No. 128,972, March 29, 1971, Pat. No. 3,759,810. This application Jan. 31, 1973, Ser. No. 328,435
Int. Cl. C23b *5/68*
U.S. Cl. 204—300 **4 Claims**



1. Apparatus for electrocoating round, metal parts having raw edges with a resinous, organic coating, comprising:

a tank for an electrocoating bath containing said resinous, organic coating material;

a stationary, charged, electrode rail situated so as to be above said electrocoating bath; and

a non-conducting, moving guide member located so as to be immersed in said bath, said rail and guide member each having aligned grooves for rolling said parts.

3,847,787

DEVICE FOR SUPPLYING DRINKING WATER

Toshio Okazaki; Nobuko Karasawa; Tatsuo Okazaki; and Masako Arai, all of Fukuokachoni, Japan, assignors to Okazaki Manufacturing Company Limited, Tokyo, Japan

Filed Aug. 16, 1972, Ser. No. 281,046
Claims priority, application Japan, Aug. 19, 1971, 46-63201; Dec. 30, 1971, 46-2394; Feb. 29, 1972, 47-20865
Int. Cl. C02b *1/82*
U.S. Cl. 204—301 **7 Claims**

1. A device for supplying cation drinking water comprising:

a negative electrode chamber having a negative electrode,

a positive electrode chamber having a positive electrode,

a porous partition for communicating said chambers and through which cation particles are carried to said negative electrode chamber and anionic particles are carried to said positive electrode chamber by ionization current applied to the electrodes,

a tank disposed under said negative electrode chamber in

order to hold a water body including a plurality of said cation particles,

a valve system disposed between the tank and said negative electrode chamber,

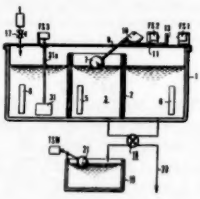
supply means for supplying natural water to both of said electrode chambers,

a first float member positioned in said tank,

a first switch means for switching in response to the action of said first float member when said first float member is lowered to a predetermined level due to use of the water body in said tank and actuating said supply means to supply natural water to both of said electrode chambers, operatively,

a second float member positioned in at least one of said electrode chambers,

a second and third switch means operatively connected to said second float member for switching in response to the action of said second float member when said second float member is moved to a first and second determined levels, respectively, in such a manner that both said chambers are filled with natural water until the water level of said at least one electrode chamber rises to said



first level actuating said second switch means for terminating the supply of natural water to said electrode chambers, and the ionization being continued until the water level as a result of electro osmosis reaches said second level in said at least one of said electrode chambers actuating said third switch means for terminating the ionization current and communicating said negative electrode chamber with said tank by means of said valve system, and

an automatic control system including: a switch control means for starting a cycle operation by a signal from said first switch means when said first float member is lowered to said predetermined level and actuating said supply means so as to cause said electrode chambers to fill with said natural water; means for actuating said supply means in reverse so as to stop the supply of said natural water by a signal from said second switch means when the water level in said at least one electrode chamber reaches said first determined level; means for starting the said ionization current to the electrodes; means for stopping said ionization current by a signal from the second switch means when the water level in said at least one electrode chamber reaches said second level due to the electroosmosis and means for actuating the valve system so as to communicate said negative electrode chamber with said tank thereby to finish the cycle operation.

3,847,788

ELECTROGEL APPARATUS FOR REMOVING ELECTROLYTES AND CONCENTRATING THE SAME FROM AN AQUEOUS SOLUTION

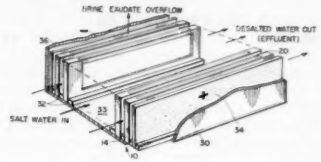
Richard A. Wallace, 43 Kingscote Gardens, Brooklyn, N.Y. 94305

Division of Ser. No. 23,311, March 27, 1970, Pat. No. 3,718,559. This application Dec. 13, 1972, Ser. No. 314,849

Int. Cl. B01d *13/02*

U.S. Cl. 204—301 **7 Claims**

1.An apparatus for simultaneously removing and concentrating electrolytes from aqueous solutions containing the same, comprising at least one electrolyte removal and concentrating unit which comprises an inorganic oxide gel core encased within an open module having a bottom wall, a pair of



parallel opposing sides and a pair of parallel opposing end walls, said opposing sides further comprising a cation-permeable membrane and an anion-permeable membrane, respectively, and a source of an appliable electrical field.

ERRATUM

For Class 206—92 see:
Patent No. 3,847,756

3,847,789

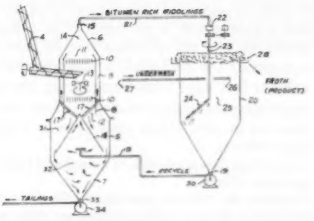
TWO STAGE SEPARATION SYSTEM

Lubomyr M. O. Cymbalisty, Edmonton, Alberta, Canada, assignor to Canada-Cities Service Ltd.; Imperial Oil Limited; Atlantic Richfield Canada Ltd. and Gulf Oil Canada Limited, part interest to each

Filed May 29, 1973, Ser. No. 364,343

Int. Cl. C10g *1/04*

U.S. Cl. 208—11 **2 Claims**



1. A method for separating bitumen from an aerated tar sand — water slurry containing bitumen and coarse and fine solids particles, comprising the steps of:

a. introducing the slurry into a first vessel, having a downwardly converging conical wall having a bottom outlet;

b. settling substantially all the coarse solids particles into the bottom end of the first vessel;

c. removing the coarse solids particles from the first vessel through its bottom outlet;

d. floating the major portion of the bitumen to the upper end of the first vessel;

e. transferring the floated bitumen, together with some fine solids particles and water, into a second vessel;

f. floating the bulk of the transferred bitumen to the upper surface of the contents of the second vessel to form a bitumen froth;

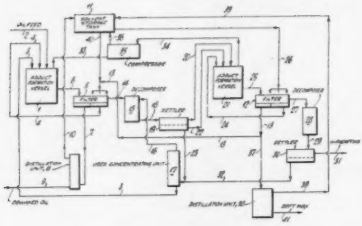
g. recovering the bitumen froth from the second vessel; and

h. withdrawing a stream comprising water, fine solids particles, and a minor amount of the transferred bitumen from the bottom end of the second vessel.

3,847,790
TWO STAGE UREA DEWAXING PROCESS

Joachim Putz, Offenthal, Germany, assignor to Edeleanu Gesellschaft mbH, Frankfurt, Germany

Filed July 24, 1972, Ser. No. 274,714
Claims priority, application Germany, July 31, 1971, 2138428
Int. Cl. C07b 21/00
U.S. Cl. 208—25 11 Claims



1. In a two stage urea dewaxing process for the simultaneous production of high purity normal paraffins and dewaxed mineral oil from a mineral oil feedstock containing normal paraffins and a lesser quantity of isoparaffins where, in each stage, an adduct of urea and normal paraffins is formed from admixtures of normal paraffins, aqueous urea solution and the wash filtrate from that stage comprising an oil solvent, the adduct-forming mixture is separated into a liquid stream and the solid adduct, the liquid stream is utilized as a wash stream in the other stage or is processed to recover dewaxed oil, the adduct is washed with a wash stream comprising oil solvent and the adduct is decomposed to produce a normal paraffin-containing stream and an aqueous urea stream, the improvement which comprises:

a. forming the adduct for the first stage with sufficient urea to form an adduct of substantially all of the normal paraffins together with a portion of the isoparaffins in the feedstock, the adduct being formed from an admixture comprising the feedstock, a first aqueous urea solution and the first stage wash filtrate from step (d),

b. separating the adduct of step (a) from the admixture of step (a) to yield a first stage primary filtrate and a first stage adduct,

c. recovering dewaxed oil and oil solvent from the first stage primary filtrate,

d. washing the first stage adduct with a wash stream comprising oil solvent producing a first stage wash filtrate,

e. decomposing the washed first stage adduct to form a feed stream for the second stage comprising normal paraffins and isoparaffins and a second aqueous urea solution,

f. forming the adduct for the second stage from the feed stream for the second stage and a limited quantity of urea to form an adduct of normal paraffins substantially free of isoparaffins, the adduct being formed from an admixture comprising the feed stream for the second stage, a portion of the second aqueous urea solution, and the second stage wash filtrate from step (h),

g. separating the adduct of step (f) from the admixture of step (f) to yield a second stage primary filtrate and a second stage adduct,

h. washing the second stage adduct with a wash stream comprising fresh oil solvent producing a second stage wash filtrate,

i. decomposing the washed second stage adduct to form a normal paraffin-containing stream and a third aqueous urea solution, and

j. recovering normal paraffins from the normal paraffin-containing stream.

3,847,791
PROCESSS FOR THE PRODUCTION OF NORMAL PARAFFINS BY UREA DEWAXING OF MINERAL OIL DISTILLATES

Max Kunert, Neu-Wulmstorf, and Lothar Sandhack, Rheurdt, both of Germany, assignors to Deutsche Texaco Aktiengesellschaft, Hamburg, Germany

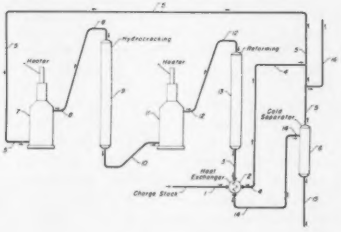
Filed Apr. 25, 1973, Ser. No. 354,284
Claims priority, application Germany, Apr. 27, 1972, 2220594
Int. Cl. C10g 43/04
U.S. Cl. 208—25 7 Claims

1. In a process for the recovery of n-paraffins from mineral oil distillates comprising reacting the mineral oil, diluted with an organic solvent, at a temperature of 20° to 40°C, with an aqueous or alcoholic urea solution saturated at elevated temperature to form solid n-paraffin-urea adducts, separating the adducts from the dewaxed mineral oil solution, washing the adducts with an organic solvent and decomposing the washed adducts by organic solvent extraction or by the influence of heat, water and/or said organic solvent, the improvement which comprises diluting the mineral oil distillate charge material in the adduct-forming step with an organic solvent which is a solvent mixture consisting essentially of from about 70 to 95 volume percent of a C_5–C_6 hydrocarbon and of from about 30 to 5 volume percent of methylisobutylketone.

3,847,792
HIGH OCTANE MOTOR FUEL PRODUCTION

Charles V. Berger, Western Springs, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. No. 237,776, March 24, 1972, abandoned. This application Oct. 10, 1973, Ser. No. 405,348
Int. Cl. C10g 37/10
U.S. Cl. 208—60 7 Claims



1. A process for the production of a high octane motor fuel which comprises the steps of:

a. reacting naphtha boiling range hydrocarbons, containing cyclic components, with hydrogen, in a first reaction zone, in contact with a first catalytic composite of a Group VIII noble metal component and a zeolitic aluminosilicate carrier material and at a temperature in the range of about 350°F. to about 800°F. and a pressure from about 100 to about 400 psig.;

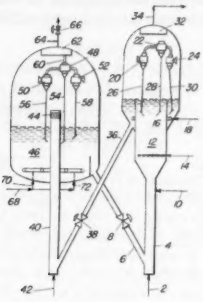
b. reacting the resulting first reaction zone effluent, without intermediate separation thereof, in a second reaction zone, in contact with a second catalytic composite comprising platinum and alumina, at a temperature in the range of about 800°F. to about 1,100°F. and a pressure of from 100 to about 400 psig., said temperature and pressure selected to convert naphthenes to aromatic hydrocarbons; and,

c. recovering said high octane motor fuel from the resulting second reaction zone effluent.

3,847,793
CONVERSION OF HYDROCARBONS WITH A DUAL CRACKING COMPONENT CATALYST COMPRISING ZSM-5 TYPE MATERIAL

Albert B. Schwartz, Philadelphia, Pa., and Harry A. McVeigh, Somerdale, N.J., assignors to Mobil Oil Company, New York, N.Y.

Filed Dec. 19, 1972, Ser. No. 316,633
Int. Cl. C10g *11/18, 37/02*; **B01j** *11/68*
U.S. Cl. 208—70 **11 Claims**



1. In a process for converting hydrocarbons in the pressence of fluidized catalyst particles and regeneration of the catalyst particles the method for improving the production of high octane gasoline boiling range materials, which comprises

a. circulating in the hydrocarbon conversion catalyst regeneration process a catalyst composition comprising a mixture of a large pore size crystalline aluminosilicate cracking component in combination with a ZSM-5 type of crystalline aluminosilicate,

b. contacting regenerated catalyst as a suspension under elevated temperature cracking conditions within the range of 1,000° F. to 1,400° F. initially with a hydrocarbon feed boiling above gasoline end point material up to about 1,100° F. in the initial portion of a riser conversion zone and then with a higher coke producing hydrocarbon feed in a downstream portion of the riser conversion zone under conditions to selectively coke deactivate substantially only the large pore component of the catalyst,

c. passing the suspension with coke deactivated large pore crystalline cracking component in combination with the ZSM-5 component upwardly into the lower portion of a dense fluid bed of said catalyst maintained at a temperature in the range of 900° F. up to about 1,100° F.,

d. recovering hydrocarbon products of conversion from said dense fluid catalyst bed enriched in gasoline boiling range materials by ZSM-5 conversion of gasiform olefinic hydrocarbons, and

e. passing catalyst from said fluid bed through catalyst stripping and regeneration before return in a heated condition to the riser hydrocarbon conversion zone.

3,847,794
SULFUR-FREE REFORMING WITH A PLATINUM-TIN CATALYST

Richard E. Rausch, Mundelein, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Continuation-in-part of Ser. Nos. 201,576, Nov. 23, 1971, Pat. No. 3,745,112, and Ser. No. 807,910, March 17, 1969, Pat. No. 3,740,328. This application May 29, 1973, Ser. No. 364,577The portion of the term of this patent subsequent to July 10, 1990, has been disclaimed.
Int. Cl. C10g *35/08*
U.S. Cl. 208—88 **15 Claims**

1. A process for catalytically reforming a substantially sulfur-free gasoline fraction, which process comprises contacting the gasoline fraction and a substantially sulfur-free hydrogen stream at reforming conditions with a substantially sulfur-free catalyst comprising a combination of a platinum group component, a tin component and a halogen component with a porous carrier material, wherein the components are present in amounts sufficient to result in the catalyst containing, on an elemental basis, about 0.01 to about 2 wt. % platinum group metal, 0.01 wt. % to about 5 wt. % tin and about 0.1 to about 3.5 wt. % halogen, wherein the tin component is uniformly dispersed throughout the porous carrier material in a particle size which is less than 100 Angstroms in maximum dimension, wherein substantially all of the platinum group component is present in the catalyst as an elemental metal and wherein substantially all of the tin component is present in the catalyst in an oxidation state above that of the elemental metal.

3,847,795
HYDROCRACKING HIGH MOLECULAR WEIGHT HYDROCARBONS CONTAINING SULFUR AND NITROGEN COMPOUNDS

Robert W. Rieve, Springfield, and Harold Shalit, Drexel Hill, both of Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 13, 1973, Ser. No. 351,075
Int. Cl. C10g *13/08*
U.S. Cl. 208—108 **8 Claims**

1. A method of hydrocracking high molecular weight hydrocarbons containing sulfur and nitrogen compounds which comprises contacting said hydrocarbons at temperatures in the range of from 400° to 1,200° F. at pressures in the range of from 100 psig to 5,000 psig with from 100 to 5,000 standard cubic feet of hydrogen per barrel of hydrocarbon charge in the presence of a catalyst soluble in said hydrocarbons at said temperatures, said catalyst being produced from a mixture of aluminum chloride and palladium chloride wherein in the palladium chloride-aluminum chloride catalyst the palladium ranges from 0.001 to 1.0 weight per cent based on the weight of the hydrocarbon charge and the aluminum chloride ranges from 0.005 to 10.0 weight per cent based on the weight of the hydrocarbon charge with the molar ratio of aluminum chloride to palladium chloride being at least 2:1.

3,847,796
HYDROCRACKING PROCESS FOR THE PRODUCTION OF LPG

Lee Hilfman, Mount Prospect; Ernest L. Pollitzer, Skokie, and Edward Michalko, Chicago, all of Ill., assignors to Universal Oil Products Company, Des Plaines, Ill.

Filed Mar. 15, 1973, Ser. No. 341,442
Int. Cl. C10g *13/02*
U.S. Cl. 208—111 **6 Claims**

1. A hydrogen-consuming process for selectively producing LPG from a hydrocarbon charge stock boiling below about 600°F., which comprises contacting said charge stock and hydrogen with a catalyst comprising a Group VIII metal component combined with an alumina carrier material containing a uniform distribution of about 20 to about 30 weight percent of finely divided mordenite particles at hydrocracking conditions including a pressure of about 300 to about 1800 psig., a temperature of about 600°F. to about 850°F., a LHSV of about 1 to about 10 $hr.^{-1}$ and a hydrogen circulation rate of about 5000 SCFB to about 15,000 SCFB based on fresh charge stock, said catalyst having been prepared by commingling said mordenite with an aluminum halide sol, gelling the resultant mixture and then calcining the gelled mixture.

3,847,797

VISBREAKING A HEAVY HYDROCARBON FEEDSTOCK IN A REGENERABLE MOLTEN MEDIUM

Israel S. Pasternak; John J. Dugan, and James P. Higgins, all of Sarnia, Ontario, Canada, assignors to Exxon Research and Engineering Company, Linden, N.J.

Continuation-in-part of Ser. No. 186,770, Oct. 5, 1971, abandoned. This application Aug. 14, 1972, Ser. No. 280,181
Int. Cl. C10g *11/02*
U.S. Cl. 208—114 17 Claims

1. A process for converting a heavy hydrocarbon feedstock to lighter hydrocarbon materials which comprises contacting said feedstock with a regenerable molten medium containing an alkaline reagent selected from the group consisting of alkali metal oxides, hydroxides and mixtures thereof, and alkali metal oxides, hydroxides and mixtures thereof in combination with alkaline earth metal oxides, hydroxides and mixtures thereof and a glass-forming oxide wherein the mole ratio of the alkaline reagent, expressed as the oxide thereof, to the glass-forming oxide is about 1.5 to about 3 at a temperature in the range of from about the melting point of said medium to less than about 1,200°F. for a time sufficient to form lighter hydrocarbon materials.

3,847,798

OXIDATION AND DESULFURIZATION OF A HYDROCARBON MATERIAL

Jin Sun Yoo, South Holland, Ill., assignor to Atlantic Richfield Company, New York, N.Y.

Filed June 5, 1972, Ser. No. 259,946
Int. Cl. C10g *27/04, 23/12*
U.S. Cl. 208—209 16 Claims

1. In a desulfurization process for producing a hydrocarbon material of reduced sulfur content wherein at least a portion of the sulfur in a sulfur-containing hydrocarbon material at least a major portion of which boils above about 550°F., is preferentially oxidized by contacting said sulfur-containing hydrocarbon material with active oxygen in the form of an oxidant selected from the group consisting of organic peroxides, organic hydroperoxides, organic peracids, hydrogen peroxide and mixtures thereof, the improvement which comprises heating said oxidized sulfur-containing hydrocarbon material with at least one hydrocarbon hydrogen donor component capable of transferring hydrogen to said oxidized material under conditions such that hydrogen is transferred from at least a portion of said component to form hydrogen sulfide without the addition of a catalyst, said heating occurs at a temperature in the range from about 500°F. to about 1350°F. and such that for each 100 parts of said oxidized sulfur-containing hydrocarbon material from about 5 parts to about 2000 parts of hydrocarbon hydrogen donor component are present, and thereafter recovering from said heating a hydrocarbon material of reduced sulfur content.

3,847,799

CONVERSION OF BLACK OIL TO LOW-SULFUR FUEL OIL

William H. Munro, Lincolnshire, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

Filed Oct. 10, 1972, Ser. No. 296,385
Int. Cl. C10g *31/14*
U.S. Cl. 208—210 6 Claims

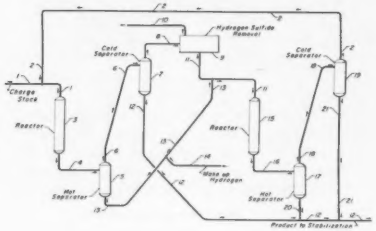
1. A process for producing a fuel oil, containing less than about 1.0 percent by weight of sulfur, from a sulfurous black oil charge stock, which process comprises the steps of:

a. reacting said charge stock with an impure hydrogen gas containing hydrogen sulfide, in a first catalytic reaction zone, at desulfurization conditions selected to convert lower boiling sulfurous compounds into hydrogen sulfide and hydrocarbons;

b. separating at least a portion of the resulting first reaction zone effluent, in a first separation zone, at substantially the same temperature and pressure, to provide a first principally vaporous phase and a first principally liquid phase;

c. separating at least a portion of said first vaporous phase, in a second separation zone, at substantially the same pressure and a temperature in the range of about 60°F. to about 140°F., to provide a second principally vaporous phase and a second principally liquid phase;

d. removing hydrogen sulfide from said second vaporous phase, and reacting at least a portion of the remaining relatively pure hydrogen with at least a portion of said first liquid phase, in a second catalytic reaction zone, at desulfurization conditions selected to convert additional sulfurous compounds into hydrogen sulfide and hydrocarbons;



e. separating the resulting second reaction zone effluent, in a third separation zone, at substantially the same pressure and temperature, to provide a third principally vaporous phase and a third principally liquid phase;

f. separating at least a portion of said third vaporous phase, in a fourth separation zone, at substantially the same pressure and a temperature in the range of about 60°F. to about 140°F., to provide a fourth principally vaporous phase containing hydrogen and hydrogen sulfide and a fourth principally liquid phase;

g. recycling at least a portion of said fourth vaporous phase to said first reaction zone as said impure hydrogen gas; and,

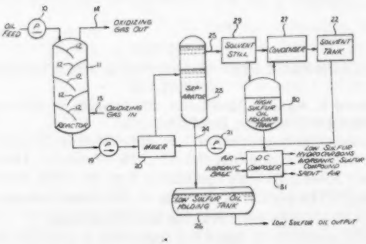
h. recovering said fuel oil from said second, third and fourth liquid phases.

3,847,800

METHOD FOR REMOVING SULFUR AND NITROGEN IN PETROLEUM OILS

Eugene Daniel Guth, Palos Verdes, and Arthur F. Diaz, University City, both of Calif., assignors to KVB Engineering, Inc., Justin, Calif.

Filed Aug. 6, 1973, Ser. No. 385,894
Int. Cl. C10g *19/08*
U.S. Cl. 208—236 31 Claims



1. The method of reducing sulfur and nitrogen compound concentrations in petroleum oil which comprises:

a. exposing petroleum oil to an oxidizing gas containing one or more oxides of nitrogen chosen from the following list: NO_2, N_2O_3, N_2O_4, N_2O_5, whereby sulfur and nitrogen compounds in said petroleum oil will be oxidized:
b. mixing said petroleum oil with a solvent selected from the group consisting of methanol, methanol-water mixtures, methanol-ethanol-water mixtures and methanol-inorganic salt solutions, said solvent being substantially immiscible with said oil but being a solvent for said oxidized sulfur compounds, said oxidized sulfur compounds dissolving in said solvent; and
c. separating said oil from said solvent solution.

3,847,801

PROCESS FOR SEPARATING HYDROCARBON

William R. Moser, Westfield, N.J., assignor to Exxon Research Engineering Company, Linden, N.J.

Filed Dec. 27, 1972, Ser. No. 318,876
Int. Cl. B01d *17/00*
U.S. Cl. 208—308 **5 Claims**

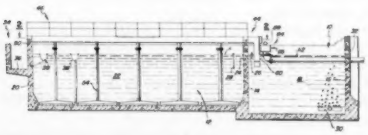
1. A process for the selective separation of constituents contained in a non-olefinic liquid hydrocarbon mixture, said constituents being selected from the group consisting of normal paraffins, isoparaffins, naphthenes, and aromatic compounds, said method comprising the steps of:
1. contacting said liquid mixture with a purified stream containing only NO at a temperature and pressure sufficient to cause a reaction between the NO and at least one of said constituents contained in said mixture to form a nitrated compound;
2. isolating the nitrated compound resulting in Step 1 and leaving behind an effluent;
3. successively repeating Steps 1 and 2 until
a. the nitrated product which results is that of the constituent in said effluent which has the highest order of reacting with said NO and whose parent hydrocarbon can be recovered by catalytic hydrogenation, or
b. the effluent comprises substantially a single, uncomplexed consitiuent and recovering the said particular constituent by flash distillation from the product from Step 3(a).

3,847,802

METHOD AND APPARATUS FOR TREATING WASTE MATERIAL

Arthur A. Lemke, Evanston, Ill., assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 19, 1973, Ser. No. 352,544
Int. Cl. C02c *1/08*
U.S. Cl. 210—7 **17 Claims**



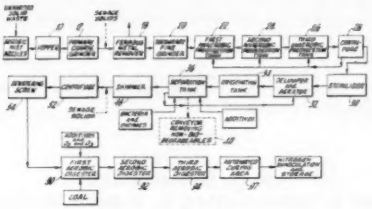
1. Apparatus for treating aqueous waste material comprising an aeration tank and a settling tank having a common wall, said settling tank having a tank floor; means defining ports adjacent the upper end of said wall to allow waste material including liquid and aerated sludge to flow from said aeration tank to said settling tank, said aerated sludge settling to the tank floor; and withdrawal means movable along the settling tank floor for withdrawing settled aerated sludge from the tank floor and returning the sludge to said aeration tank, said withdrawal means including a vertical conduit in said aeration tank with an open end of said conduit located below the ports in said common wall; and means cooperating with said vertical conduit to periodically divert sludge for collection outside said aeration tank, said means cooperating with said vertical conduit including means for closing said open end of said conduit, overflow means in said withdrawal means through which said sludge flows when said open end is closed and collection means for receiving the sludge flowing through said overflow means.

3,847,803

PROCESS FOR SEPARATING AND CONVERTING WASTE INTO USEABLE PRODUCTS

Pliny Fisk, Amazon Rd. & Dale St., Mohegan Lake, N.Y. 10547

Filed Mar. 22, 1973, Ser. No. 343,855
Int. Cl. C02c *1/02*
U.S. Cl. 210—8 **22 Claims**



1. A process for separating the biodegradeable and non-biodegradeable material from waste, comprising the steps of: grinding unsorted waste into particulate form;
anaerobically treating the unsorted waste particles;
sterilizing the anaerobically treated particles;
mixing the sterilized particles with an aerobic and enzyme activated liquid to form a slurry;
inducing the slurry to flow;
controlling the temperature and pH of the moving slurry to cause fermentation;
permeating the moving slurry with oxygenating gases to aid in fermentation and in causing the biodegradeable material to rise to the surface of the moving slurry and form a froth;
removing the biodegradeable froth from the top of the slurry; and
collecting the non-biodegradeable material which settles out.

3,847,804

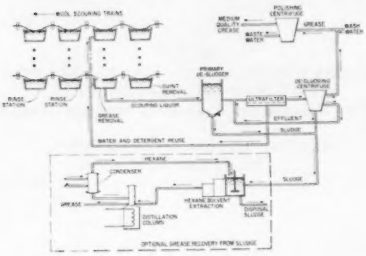
PROCESS OF TREATING WOOL-SCOURING LIQUOR AND CENTRIFUGE EFFLUENT

Joseph Del Pico, Brockton, Mass., assignor to Abcor, Inc., Cambridge, Mass.

Filed Feb. 20, 1973, Ser. No. 333,808
Int. Cl. B01d *13/00*
U.S. Cl. 210—23 **16 Claims**

1. A process for the treatment of emulsion-scouring liquor containing a wool-grease-in-water emulsion, which process comprises in combination:
a. introducing the emulsion-scouring liquor into a membrane unit characterized by a semipermeable membrane adapted to prevent the passage of the wool-grease-in-water emulsion and suspended material, and to permit the passage of water;
b. introducing the emulsion-scouring liquor into an emulsion-concentrate fraction containing the wool grease and a permeate fraction essentially free of wool grease, emulsion and suspended particles, the separation of the emulsion-scouring liquor carried out at a temperature sufficient to maintain during the separation step a liquid-

liquid emulsion rather than a solid-liquid emulsion of the wool grease in the aqueous emulsion-scouring liquor; and



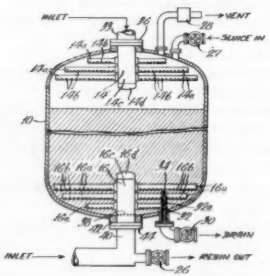
c. recovering the wool grease from the emulsion-concentrate fraction.

3,847,805

ION EXCHANGE VESSEL

Richard K. Voedisch, Rockford, Ill., assignor to Illinois Water Treatment Company, Rockford, Ill.

Filed Dec. 7, 1972, Ser. No. 313,145
Int. Cl. B01d *15/04*
U.S. Cl. 210—33 **5 Claims**



1. An ion exchange vessel containing ion exchange resin comprising a distribution means, liquid supply means connected to said distribution means for providing upward service flow, a collection means positioned above said distribution means, liquid supply means connected to said collection means for selectively providing downward liquid flow, said distribution means comprising unscreened apertured distribution means for both supplying said upward service flow and for removing resin from said vessel when said downward liquid flow is being selectively provided through said vessel and draining means comprising a screened lower drain for selectively draining liquid from said vessel without the removal of any substantial amount of resin from said vessel, said distribution means comprises a hollow hub which protrudes upwardly through the center of the bottom of said vessel and a plurality of hollow radially extending unscreened apertured laterals which are in fluid communication with said hub, said hub having a plurality of unscreened holes therein which extend circumferentially around said hub adjacent the area where said hub protrudes through the bottom of said vessel.

3,847,806

METHOD FOR TREATING SLUDGE FORMED IN CITY SEWAGE SYSTEMS

Tadaharu Kuroiwa; Yukio Isayama; Akira Yokota; Tsukasa Kamio; Kazuhiko Jinnai; Eiichi Abe; Kunio Kimura, all of Tosu; Morihisa Hioki, Kagoshima, and Hisataka Noguchi, Hachioji, all of Japan, assignors to Director-General of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 8, 1973, Ser. No. 339,132
Claims priority, application Japan, Mar. 21, 1972, 47-28308
Int. Cl. B01d *37/02*
U.S. Cl. 210—45 **10 Claims**

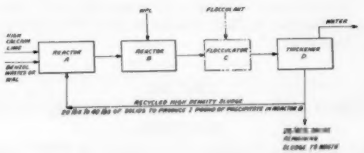
1. A method of improving the filtration of sewage sludge and recovering a useful product therefrom which comprises the steps of:
   1. mixing sewage sludge with unfoamed foamable granular volcanic ash particles, in a weight ratio of about 3–10:1 relative to the dry weight of said sludge, said volcanic ash particles having a diameter of about 20μ–0.6 mm,
   2. filtering the resultant mixture,
   3. incinerating the filtered mixture to foam said volcanic ash particles, and
   4. recovering the incinerated product.

3,847,807

REMOVAL OF CYANIDE AND COLOR BODIES FROM COKE PLANT WASTEWATER

Stewart T. Herman, Hellertown, and Russel J. Horst, Bethlehem, both of Pa., assignors to Bethlehem Steel Corporation, Bethlehem, Pa.

Filed Mar. 21, 1973, Ser. No. 343,598
Int. Cl. C02b *1/30*; **C02c** *5/02*
U.S. Cl. 210—46 **3 Claims**



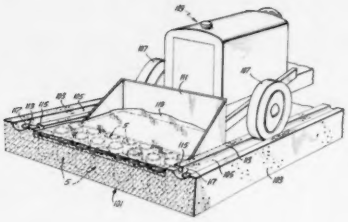
1. A process for removing cyanides and complex organic compounds which color liquid wastes from coke oven wastewaters, comprising:
   a. mixing high calcium lime, the wastewater to be purified and a major portion of the high density sludge formed in step (e) in a first reactor forming a first mix having a pH of between about 10.0 to about 12.0,
   b. transferring the first mix from the said first reactor to a second reactor,
   c. mixing a solution selected from the group consisting of acid mine drainage and waste pickle liquor, which solution contains iron values into the first mix in the second reactor to form a second mix having a pH of between about 9.0 to about 10.0 and precipitating a major portion of the cyanides and complex organic compounds originally present in the wastewater being purified,
   d. flocculating the precipitate formed in step (c),
   e. passing the second mix containing flocculated precipitate of step (d) to a settling means wherein the flocculated precipitate settles out as a high density sludge and clarified water is decanted from the settling means, and
   f. recycling back to the first reactor from about **20** pounds to **40** pounds of the high density sludge formed in step (e) for every pound of new precipitate formed in step (c).

3,847,808

METHOD AND APPARATUS FOR TREATING SLUDGE

Guenter Spohr, 3473 Manassas Ct., Davidsonville, Md. 21035

Filed Mar. 27, 1973, Ser. No. 345,258
Int. Cl. B01d *23/24*
U.S. Cl. 210—66 11 Claims



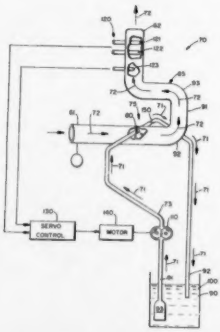
1. A sludge drying bed comprising:
a. a block of material having a top surface and being capable of supporting a heavy load thereon and having a plurality of openings extending therethrough,
b. a cartridge positioned in each opening and filter material positioned in each cartridge, openings.
c. the tops of said cartridges extending at least close to but no higher than the top surface of said block,
d. said cartridge further being substantially open at the top and sufficiently closed at the bottom to retain the filter material therein, and openings in said bottom whereby water and the like can drain therethrough,
e. an outer peripheral edge extending substantially above the top of the cartridges to retain sludge and water therein, and a slot in said peripheral edge whereby bound water can flow off the retained sludge, and
f. means for scraping the sludge off said block without disturbing the filter material in said cartridges.

3,847,809

PROPORTIONING SYSTEM

J. David Kopf, Tujunga, Calif., assignor to David Kopf System, Tujunga, Calif.

Filed July 3, 1972, Ser. No. 268,308
Int. Cl. B01d *31/00, 13/00*
U.S. Cl. 210—22 12 Claims



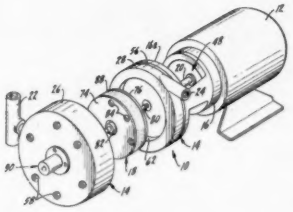
1. A method for use in hemodialysis of forming a dialysate by mixing predetermined amounts of a fluid in a flow stream and maintaining the ratio of fluid in said flow stream for various flow rates, comprising the following steps:
constantly recirculating a first fluid along a first flow stream,
passing a second fluid through a conduit to form a second flow stream,
diverting a regulated amoung of said constantly recirculating first fluid at a preselected discharge point and discharging the same into said second flow stream at said discharge point while maintaining the constant recirculation of the remainder of said first fluid in said first flow stream,
allowing said first and second fluids to mix,
measuring the proportion of said first fluid and said second flow stream at a point downstream from which the fluids have been mixed, and
adjusting the rate at which said first fluid is discharged into said second flow stream.

3,847,810

APPARATUS FOR SEPARATING OIL FROM WATER AND MEASURING THE AMOUNT OF OIL SO SEPARATED

Angelo C. Tulumello, 18508 Lorrence Ave., Apt. 2E, Lansing, Ill. 60438

Filed May 4, 1973, Ser. No. 357,506
Int. Cl. E02b *15/04*
U.S. Cl. 210—96 12 Claims



1. Apparatus for separating oil and water comprising a chamber,
rotor means in the chamber including an absorber means which selectively absorbs oil, in conductive means,
inlet means in said chamber means for introducing oil-water mixture into the said chamber,
outlet means in said chamber near the periphery of the rotor means for removing separated water from the chamber, and
means for revolving said rotor means to establish a centrifugal force-field in said chamber which separates the oil from water, pulling the oil to the center of the rotor means and pushing separated water to the periphery of the rotor means and out the outlet means, and
circuit means coupled to the conductive means in said rotor means, said circuit means measuring capacitance across said conductive means.

3,847,811

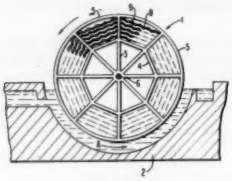
APPARATUS FOR BIOLOGICALLY PURIFYING EFFLUENT

Adolf Friedrich Johann Conrad Stengelin, deceased, late of P.O. Box 519, Obere Vorstadt, 21, Tuttlingen, Germany; Volker Stengelin, and Jorg Stengelin, heirs, both of P.O. Box 519, Obere Vorstadt, 21, Tuttlingen, Germany

Continuation-in-part of Ser. No. 884,614, Dec. 12, 1969, abandoned. This application Dec. 13, 1972, Ser. No. 314,531
Claims priority, application Germany, Dec. 17, 1968, 1815001
Int. Cl. C02c *1/02*; B01d *21/00*
U.S. Cl. 210—150 10 Claims

1. A trickling filter for biologically purifying effluent by means of aerobic microorganisms, comprising a horizontal rotatable shaft, a plurality of self-supporting filter sections annularly arranged side-by-side in fixed relation to and spaced

from said shaft in a single vertical plane, multiple passage means in each section defining tortuous flow paths providing surfaces of increased area through which passage means the effluent can penetrate and drain away, and means for supporting and rotating said shaft so that said sections successively



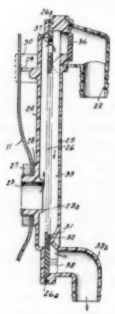
enter and leave said effluent, the longitudinal axes of the passage means extending in planes parallel to planes substantially tangential to the circumference of the filter and substantially transverse to planes through the axis of rotation of the filter.

3,847,812

INTEGRAL SELF-CLEANING FILTER AND SIDE CHECK VALVE FOR AUTOMATIC WASHER

William Ohmann, St. Joseph, Mich., assignor to Whirlpool Corporation, Benton Harbor, Mich.

Division of Ser. No. 238,890, March 28, 1972,. This application Mar. 29, 1973, Ser. No. 346,059
Int. Cl. B01d *29/38*
U.S. Cl. 210—108 **5 Claims**



1. A pressure responsive self-cleaning filter comprising a pair of rigid body members,

means releasably clamping together said body members at their peripheries,

one of said body members defining an inlet circumscribed by edges forming a valve seat,

a flexible diaphragm clamped between said body members at its periphery,

passage means forming a fluid passageway from one side of the diaphragm to the other,

the other of said body members having ribbed baffles thereon facing said diaphragm, and having a drain outlet formed therein,

and a port arranged to be connected to a source of fluid pressure which periodically changes from positive to negative,

said baffles cooperating with one side of said diaphragm to provide a filtering maze for liquid passing therebetween when negative pressure appears at said port during a filtering cycle,

said diaphragm being deformable into engaging relation with said valve seat thereby to close said inlet when positive pressure is present at said port during a pump-out cycle, and

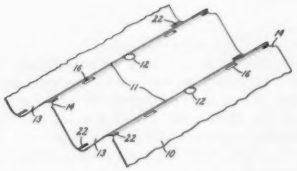
means for substantially preventing flow through said drain outlet during the filtering cycle and permitting flow through said drain outlet during the pump-out cycle.

3,847,813

COALESCING PLATE FOR FLUID MIXTURE PLATE SEPARATOR

Joseph L. Castelli, Wayne, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Dec. 27, 1972, Ser. No. 318,725
Int. Cl. B01d *21/10*
U.S. Cl. 210—232 **5 Claims**



1. A coalescing plate for a fluid mixture plate separator comprising:

a plurality of crests separated by depressions forming transverse corrugations;

spaced bleed holes in the crests of the corrugations;

spacing means including a projection integral with and extending from a first surface of said plate to space it from a similar plate; and

receptacle means including a slot in a second surface of said plate positioned opposite said projection and being adapted to receive a projection from a similar plate;

whereby a plurality of said plates may be positioned in stacked relationship, the projections being received by corresponding slots so that the transverse corrugations of each plate are spaced at all points from the transverse corrugations of adjacent plates.

3,847,814

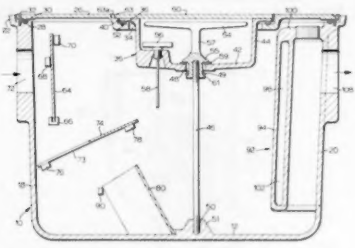
GREASE INTERCEPTOR

Rai Reiji Adachi, Scarborough, Ontario, Canada, assignor to Sarco Canada Limited, Agincourt, Ontario, Calif.

Filed Feb. 26, 1973, Ser. No. 335,819
Claims priority, application Canada, Mar. 2, 1972, 136,022
Int. Cl. B01d *21/02*
U.S. Cl. 210—237 **5 Claims**

1. An interceptor for treating grease in water comprising: a tank having an inlet end and an outlet end, a plurality of baffles disposed within the tank to control the flow of water through the tank for effecting a separation of grease from water by gravity, means at the tank outlet end for retaining separated grease within the tank, a lid for closing said tank, means for securing said lid peripherally to the tank to effect a liquid-tight and gas-tight seal therebetween, said lid having a circular opening and an annular recess formed in its upper surface about the circular opening, a cover-well having a circular side wall with closed bottom and a flanged rim formed on the side wall adapted to seat in said lid opening on the annular recess, and means for securing the cover-well tightly to the tank to effect a liquid-tight and gas-tight seal therebetween and to secure the central portion of the lid to the tank comprising a bolt and handle assembly, said bolt being fastenable to an underlying portion of the tank and said handle

having a shank portion extensible through an opening in the cover-well adapted to be threaded onto said bolt, an annular shoulder formed on the handle shank having a diameter greater than the diameter of the opening in the cover-well whereby the shoulder tightly abuts the cover-well upon fastening of the bolt and handle assembly to the tank, an annular



ridge formed on the shank portion extensible through the cover-well opening, and an O-ring seated on said shank portion against the ridge adapted to abut the underside of the cover-well whereby the cover-well can be raised from the lid by release of the handle from the bolt and raising of the handle.

3,847,815

SCOOP FOR COLLECTING A LAYER OF POLLUTING MATERIAL ON WATER SURFACES

Lucien Chastan-Bagnis, 21 Avenue Isola Bella, 06400 Cannes, France

Filed Jan. 31, 1973, Ser. No. 328,310
Claims priority, application France, Feb. 4, 1972, 72.05078
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **3 Claims**

1. A device for collecting hydrocarbons, and other polluting agents floating on the surface of a body of water, comprising:
a scoop member defining a compartment having a bottom wall, a rear wall, rearwardly converging side walls and an open front;
a water discharge opening in said bottom wall adjacent said rear wall;
means in said open front for directing jets of water rearwardly generally parallel to said bottom wall below but adjacent the surface of said body of water to thereby direct laminar flow of water and pollutants to the rear of said compartment whereby said pollutants accumulate in a thick layer adjacent said rear wall; and
means on said device, adjacent the rear thereof, for removing pollutants from said thick layer.

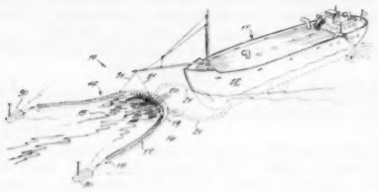
3,847,816

POLLUTION SUCTION WATER SWEEPER

James DiPerna, 85 Foxhill Ter., Staten Island, N.Y. 10305

Filed Mar. 7, 1973, Ser. No. 339,381
Int. Cl. E02b *15/04*
U.S. Cl. 210—242 **1 Claim**

1. In a pollution suction water sweeper, the combination of a ship, tugs, and a floating harvesting ring in front of said ship, and means to collect oil from a sea surface, said means comprising intake lines extending from said ring to an oil collection tank system located inside a hold of said ship, said ring comprising an elongated assembly which at its opposite ends comprises a flexible empty accordian-like hose that includes a weighed apron, and a central portion with a front side and a rear side between said hoses comprising a skimmer consisting of a hose with the interior of said hose connected to said intake lines, said skimmer hose having a plurality of spaced apart, transverse extending vertically slitted openings that are



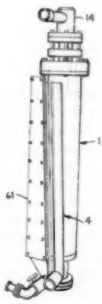
located on said front side of said skimmer hose so to admit said oil to the interior of said central hose portion, the ends of said harvesting ring being connected to director tugs in front of said ship and which tugs pull said ring ends in a forward direction, said tugs being guided by electronic signals from a control station within said ship, said collection tank system comprising a series of tanks through which a collected mixture of sea water and oil is progressively passed in series whereby oil may be collected therein and separated water discharged from said tanks by pump means.

3,847,817

FILTER UNIT HAVING A GENERALLY CYLINDRICAL FILTER ELEMENT SUPPORTED ON BEARINGS

Ronald D. Jarman, Brady Township, Kalamazoo City, Mich. 49097, assignor to Dover Corporation, Portage, Mich.

Filed Dec. 4, 1972, Ser. No. 311,789
Int. Cl. B01d *33/00*
U.S. Cl. 210—297 **18 Claims**



1. In a self-cleaning filter unit for removing solid material from a liquid to be filtered, the combination comprising:
a housing and a solids receptacle communicating with said housing; a filter element within said housing, said housing and filter element being relatively rotatable;
inlet means introducing liquid into said housing externally of said filter element and means for withdrawing filtrate from within said filter element;
a filtrate deflector within said filter element and aligned on a nondiametric chord of said filter element, said deflector being fixedly located with respect to said housing and receptacle, and means relatively rotating siad filter element and deflector for deflecting a cleaning flow of fil-

trate from within the filter element radially outwardly therethrough toward a discrete location fixed with respect to said receptacle.

3,847,818

APPARATUS FOR SEPARATING FLUIDS INTO TWO FRACTIONS BY MEANS OF SEMIPERMEABLE MEMBRANES

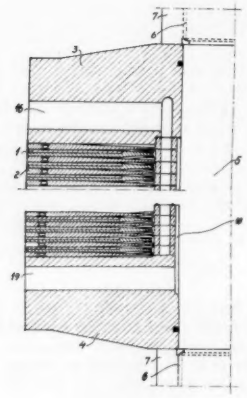
Rud Frik Madsen; Ole Jentoft Olsen, and Mogens Martin Stenseng, all of Nakskov, Denmark, assignors to Aktieselskabet De Danske Sukkerfabrikker, Copenhagen K., Denmark

Filed Feb. 2, 1973, Ser. No. 329,195

Claims priority, application England, Feb. 2, 1972, 4972/72

Int. Cl. B01j *31/00*

U.S. Cl. 210—321 **3 Claims**



1. An apparatus for separating fluids into two fractions by means of semipermeable membranes comprising a stack of alternating guide plates and membrane supports, each membrane support supporting a semipermeable membrane on each side of the support so as to form flow passages extending parallel to the membrane surfaces, each of said guide plates being provided with apertures extending through the guide plates, liquid inlet means and liquid outlet means communicating with said flow passages extending parallel to the membrane surfaces and means for collecting and discharging liquid passing through said membranes, characterized in that the stack of guide plates and membrane supports comprises a longitudinally extending duct spaced apart from the apertures of the guide plates, and that each guide plate comprises at least one sealing member located within said longitudinally extending duct, said sealing members being mounted so as to form at least two longutidinally extending flow passages, one of said longitudinally extending flow passages being connected to the liquid inlet means, and the second longitudinally extending flow passage being connected to the liquid outlet means, some of said sealing members comprising supply channels connecting the first longitudinally extending flow passage with a flow passage extending parallel to the membrane surfaces and some sealing members comprising discharge channels connecting a flow passage extending parallel to the membrane surfaces with the said second longitudinally extending flow passage.

3,847,819

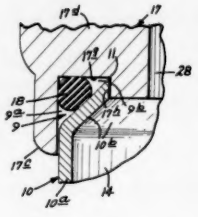
SEAL FOR FLUID FILTER

Robert L. Firth, Minneapolis, Minn., assignor to Donaldson Company, Inc., Minneapolis, Minn.

Continuation-in-part of Ser. No. 304,959, Nov. 9, 1972. This application Feb. 26, 1973, Ser. No. 327,738

Int. Cl. B01d *27/10;* **F16j** *15/48*

U.S. Cl. 210—444 **3 Claims**



1. A fluid filter, comprising:

a. a filter housing of relatively light material susceptible to flexing under pressure having a cylindrical main wall portion, and an inwardly sloping end wall portion terminating in a circular edge defining a circular open end smaller in diameter than the diameter of the main wall portion, and bottom wall means at the opposite end to thereby define a filter chamber;

b. a non-flexible cover member mounted on the open end, having a annular bottom web portion engaging said circular edge, said cover member having a depending peripheral flange portion that extends over the sloping end wall portion and over part of the main wall portion to define an annular sealing chamber between the cover member and the sloping end wall portion, said sealing chamber being generally triangular in cross-section;

c. a tubular filter element mounted in said filter chamber;

d. a first fluid passageway in said cover member leading to the interior of the filter element and a second fluid passageway in said cover member leading to the filter chamber exterior of the filter element;

e. a flexible, O-ring type seal in said sealing chamber having portions thereof in contact with said cover member and said sloping end wall portion to provide therewith a fluid tight seal between the housing and cover member;

f. an annular groove formed in said web portion, having an outer peripheral wall formed by the peripheral flange portion, and an inner peripheral wall concentric therewith, said end wall portion having said circular edge positioned in said groove adjacent said inner peripheral wall; and

g. elongated clamping means connected to the cover member and to the bottom wall means at the opposite end of the housing to hold the cover member on the housing.

3,847,820

FILTERING APPARATUS

Derek Bernard Purchas, Holmcroft Heathside Park Rd., Holmcroft, England

Filed Apr. 11, 1973, Ser. No. 350,115

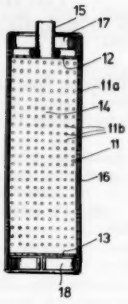
Claims priority, application Great Britain, May 17, 1972, 023069/72

Int. Cl. B01d *29/04*

U.S. Cl. 210—457 **8 Claims**

1. A filtering apparatus comprising a rigid tube having a planar outer circumferential surface and a plurality of holes therethrough along the length thereof, imperforate end walls in said tube inwardly from the ends thereof and tightly secured thereto to provide a filtered fluid chamber, a duct extending from one of said end walls communicating with said chamber to drain filtered fluid therefrom, a sheet of filter paper having

a length greater than the circumference of the tube and a height greater than the length of the tube wrapped around said tube with one edge overlapping the other edge and having the top and bottom ends folded into the ends of the tube beyond the end walls, and split resilient clamping bands in the folded



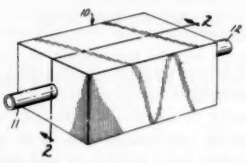
ends of the filter paper pressing the paper against the tube to lock the paper in tubular form around the tube whereby fluid being filtered will pass through the tubular wrapped paper pressing it against the planar surface of the rigid tube and also pressing together the overlapped edges of the paper.

3,847,821

SEPARATOR FOR REMOVING A DISPERSED LIQUID PHASE FROM A CONTINUOUS LIQUID PHASE

Dennis L. Krueger, Hudson, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Oct. 19, 1973, Ser. No. 407,965
Int. Cl. B01d *25/16*
U.S. Cl. 210—488 **20 Claims**



1. A separator for treating a liquid to remove a dispersed liquid phase from a continuous liquid phase comprising (1) a housing having an inlet, an outlet, and a separation chamber between the inlet and outlet through which liquid being treated passes; and (2) a separator element that tightly occupies the inside of the separation chamber and comprises a plurality of discrete sections of coalescing and sorbing media interspersed in intimate contact with one another; the coalescing media having less resistance to liquid flow than the sorbing media, and extending longitudinally through the separator element so as to establish substantially continuous thin minimal-pressure-drop channels for liquid being treated, and directing dispersed liquid phase to the interface of the coalescing and sorbing media; and the sorbing media being wetted by the dispersed liquid phase in preference to being wetted by the continuous liquid phase, whereby the dispersed liquid phase is sorbed into the sorbing media.

3,847,822

ASYMMETRIC MEMBRANE OF POLYVINYL PYRROLIDONE-CELLULOSE ACETATE BLENDS FOR USE AS HEMODIALYSIS MEMBRANES

Harry F. Shuey, El Monte, Calif., assignor to the United States of America as represented by the Secretary, Department of Health, Education, and Welfare

No Drawing. Filed May 24, 1972, Ser. No. 256,512
Int. Cl. B01d *13/00, 39/16*
U.S. Cl. 210—500 **4 Claims**

1. An asymmetric hemodialysis membrane comprising a homogeneous mixture of polyvinyl pyrrolidone and cellulose acetate, said membrane being permeable to inulin and essentially impermeable to albumin.

3,847,823

OVERBASED HIGH PLUS LOW MOLECULAR WEIGHT SULFONATE WATERFLOOD ADDITIVE

Charles R. Clark, M. Duane Gregory, Oliver C. Kerfoot, and Fred C. Veatch, Ponca City, Okla., Delmar D. Krehbiel, Lubbock, Tex., and Carl D. Kennedy, Ponca City, Okla., assignors to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Feb. 26, 1973, Ser. No. 335,995
Int. Cl. C09k *3/00;* **E21b** *43/25*
U.S. Cl. 252—8.55 D **4 Claims**

1. A composition comprising an overbased mixture comprising a water-soluble alkali metal hydrocarbon sulfonate plus an oil-soluble alkali metal hydrocarbon sulfonate plus a base component which is an alkali metal hydroxide; the anionic waterflood additive being sufficiently overbased that the ratio: "weight of excess base component/weight of sulfonate" is about 0.03 to about 2.0.

3,847,824

SOLID STICK LUBRICANT FOR TAPPING HOLES

Michael James Marchitto, 6550 SW. 10th St., and Vincent James Landriscina, Jr., 721 SW. 64th Way, both of Pembroke Pines, Fla. 33023

Filed Mar. 13, 1970, Ser. No. 19,323
Int. Cl. C10m *5/12, 5/18, 5/24*
U.S. Cl. 252—12 **10 Claims**

1. A solid lubricant composition comprising a blended admixture of a major proportion of mineral lubricating oil, a minor proportion of the additive compounds: lead naphthenate, tricresyl phosphate and o-dichlorobenzene, each of said additive compounds being present in an amount of at least 0.1 percent by weight and sufficient amounts of hydrocarbon wax and higher fatty acid to provide a solid composition.

3,847,825

PARTIALLY CARBONIZED ORGANIC POLYMERS AS MATRICES FOR SELF-LUBRICATING FILMS AND COMPOSITES

Melvin T. Lavik and Ronald D. Hubbell, Kansas City, Mo., assignors to Midwest Research Institute, Kansas City, Mo.

No Drawing. Filed Nov. 8, 1972, Ser. No. 304,720
Int. Cl. C10m *7/06, 7/16, 7/18*
U.S. Cl. 252—12 **14 Claims**

1. A solid lubricant composition comprising a non-brittle, partially carbonized organic polymer which has been cured and pyrolyzed to a glasslike carbon, and particulate, solid phase lubricating pigments dispersed throughout,

the weight ratio of the lubricating pigments to the non-brittle, partially carbonized polymer being such as to provide said composition with a relatively low friction coefficient and long wear life,

said non-brittle, partially carbonized polymer having been formed by curing said polymer admixed with said lubricating pigments to an infusible, cross-linked state, and then pyrolyzing the cured admixture by heating the same to temperatures above the curing temperature in the range of from approximately 300°

C. to 1000° C. for a period of at least about three hours and sufficient to cause partial carbonization of the polymer and conversion to a glasslike carbon.

3,847,826

ANTIFRICTION COMPOSITION

Pavel Mikhailovich Ivanov, ulitsa Komsomola 5/7, kv. 7, Leningrad, U.S.S.R.

No Drawing. Filed Nov. 2, 1973, Ser. No. 412,436
Int. Cl. C10m 7/06, 7/28
U.S. Cl. 252—12 2 Claims

1. An antifriction composition comprising polytetrafluoroethylene and copper sulphide wherein the copper sulphide is present from a small effective amount up to 52% by weight of the polytetrafluoroethylene.

3,847,827

CYCLIC SULFUR-CHLORINATED OIL AND PROCESS OF MAKING

Robert L. Dinsmore, Long Beach, and Herbert D. Ivey, Pasadena, Calif., assignors to Lubrication Company of America, Los Angeles, Calif.

No Drawing. Filed Sept. 10, 1973, Ser. No. 395,741
Int. Cl. C10m 1/38
U.S. Cl. 252—48.8 11 Claims

1. A process which comprises reacting a normally liquid sulfur halide with an oil obtained from the cracking of petroleum said oil, containing as a major ingredient polynuclear aromatics and boiling between 350 and 800° F. and having separated therefrom by sulfuric acid treatment the majority of impurities which form a permanent sludge when reacted with a normally liquid sulfur halide, and separating any resulting precipitate and hydrogen halide formed therefrom to leave a stable and homogeneous cyclic oil having anti-weld properties, characterized by lack of offensive odor and containing up to about 20% total sulfur and up to about 5% total chlorine.

3,847,828

WORKING OF NON-FERROUS METALS

Edwin J. Latos, Chicago, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Filed May 14, 1973, Ser. No. 360,264
Int. Cl. C10m 1/20, 1/24
U.S. Cl. 252—56 R 6 Claims

1. In the working of zirconium or a zirconium alloy which is predominantly zirconium in movable contact with another metal, the improvement which comprises lubricating the contacting surfaces of said zirconium or alloy and metal with lubricating amounts of a water-soluble polyglycol having a molecular weight of at least about 400.

3,847,829

CRYSTALLINE BISMUTH-CONTAINING OXIDES

Robert J. Bouchard, Wilmington, Del., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Aug. 10, 1973, Ser. No. 387,479
Int. Cl. H01b 3/02
U.S. Cl. 252—63.5 10 Claims

1. The crystalline bismuth-containing oxides of the formula

$$Bi_{2-x}M_xM'_{2-y}M''_yO_{7-z}$$

wherein

M is a rare earth metal of atomic number 57–71, lead, cadmium or ytrrium,
M′ is iron, gallium, or indium,
M″ is antimony, tantalum, or niobium,
x is a number in the range 0 to 1,
y is a number in the range 1 to 1.5, and
z is a number in the range 0 to 0.5.

3,847,830

STABILIZING PEROXYGEN COMPOUNDS BY ENVELOPING IN A WATER-DISPERSIBLE LAYER

Selwyn Donald Williams, Northwich, John Philip Leaver, Lymm, and David Abbott, Welwyn Garden City, England, assignors to Laporte Industries Limited, London, England

No Drawing. Filed Jan. 17, 1972, Ser. No. 218,574
Claims priority, application Great Britain, Jan. 27, 1971, 3,240/71
Int. Cl. C11d 7/54
U.S. Cl. 252—186 12 Claims

1. A peroxygen-containing composition consisting essentially of a particulate normally unstable peroxygen compound and a water dispersible layer of from 1% to less than 15% by weight, based on the weight of the layer and of the peroxygen compound, of a solid water-insoluble compound selected from the group consisting of (1) fatty acids of greater than 8 carbon atoms, (2) alkanolamides of fatty acids of at least 8 carbon atoms, (3) glycerol esters of fatty acids of at least 8 carbon atoms, (4) long-chain aliphatic hydrocarbon alcohols, and (5) paraffin waxes, the layer enveloping the particles of peroxygen compound and at least partially stabilising them to decomposition.

3,847,831

CATALYST FOR PREPARING UNSATURATED NITRILES

Hendrik Bruins Slot and John W. Geus, Geleen, Netherlands, assignors to Stamicarbon N.V., Heerlen, Netherlands

Filed Sept. 29, 1970, Ser. No. 76,438
Claims priority, application Netherlands, Sept. 30, 1969, 6914739; Nov. 21, 1969, 6917539; Mar. 4, 1970, 7003066
Int. Cl. B01j 11/22
U.S. Cl. 252—470 8 Claims

1. A process for the preparation of a catalyst system containing oxides of bismuth, molybdenum and iron which consists essentially in carrying out the steps of:

(A) forming an aqueous acid solution containing ions of bismuth, and ions of iron in an atomic ratio no greater than 0.4:1 relative to said bismuth ions, and an aqueous alkaline solution, injecting one of said solutions into the other while maintaining the pH of the resulting aqueous solution at a virtually constant value of at least about 7 whereby a precipitate of compounds of said ions is formed, and separating said precipitate from said resulting aqueous solution;

(B) forming a suspension of said precipitate in an aqueous medium, adjusting the pH of said suspension to a value of between about 2.5 and 7, and while heating and agitating said suspension, and maintaining the pH of said suspension at a value of greater than about 2.5, introducing an aqueous solution of ammonium molybdate into said suspension in an amount in excess of a molybdenum to bismuth atomic ratio of about 1:1 by an amount of molybdenum stoichiometrically equivalent to the quantity of iron precipitated in step (A), and at a rate no greater than 0.1 gram mole of MoO_4 per liter of suspension per hour, thereafter heating said suspension at or near

the boiling temperature for a period of at least 6 hours whereby substantially all of said molybdenum is taken up by said precipitate.

3,847,832

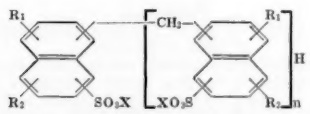
PROCESS FOR MICROENCAPSULATING HYDROPHOBIC OIL DROPLETS AND PRODUCT OF SAID PROCESS

Hiroharu Matsukawa and Keiso Saeki, Fujinomiya, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

No Drawing. Filed June 1, 1971, Ser. No. 148,902
Claims priority, application Japan, June 1, 1970, 45/47,036
Int. Cl. B44d *1/44*; B01j *13/02*
U.S. Cl. 252—316 7 Claims

1. In a process of microencapsulating hydrophobic oil droplets by complex coacervation comprising the steps of providing an oil-in-water emulsion of hydrophobic oil droplets an aqueous solution of at least two hydrophilic colloid materials having opposite electric charges, at least one of the colloids being gellable, causing coacervation of the colloid materials by diluting the emulsion with water and/or adjusting its pH, gelling the encapsulating complex colloid material by cooling and prehardening the gelled material prior to hardening by adjusting the pH of the system to the alkali side by introducing therein an alkali agent and a hardening agent, the improvement which comprises adding a condensation product of a naphthalenesulfonic acid and formaldehyde to said hydrophilic colloid materials at a stage before said prehardening step,

said condensation product of said naphthalenesulfonic acid and formaldehyde having the following structural formula:



wherein R_1 and R_2 each represent a member selected from the group consisting of a hydrogen atom and an alkyl group having from 1 to 18 carbon atoms; X represents a member selected from the group consisting of a hydrogen atom and an alkali metal; and *n* represents a degree of polymerization ranging from 1 to 12,

said condensation product being employed in an amount between $\frac{1}{200}$ and $\frac{1}{50}$ of the total amount of said hydrophilic colloid materials.

3,847,833

FLEXIBLE ACTIVATED CARBON FIBERS MANUFACTURED FROM SALT IMPREGNATED CELLULOSIC FIBERS

Alan Bailey and Frederick Arthur Pomroy Maggs, Salisbury, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of Great Britain and Northern Ireland, London, England

No Drawing. Continuation-in-part of abandoned applications Ser. No. 1,556, Jan. 8, 1970, and Ser. No. 1,557, Jan. 8, 1970. This application Feb. 4, 1972, Ser. No. 223,782
Claims priority, application Great Britain, Jan. 8, 1969, 1,147/69, 1,148/69, 1,149/69
Int. Cl. C01b *31/08*
U.S. Cl. 252—425 17 Claims

1. A process for the production of a strong, flexible, highly activated fibrous carbon having a breaking strength of at least 30,000 p.s.i., a carbon tetrachloride sorbency of at least 50% by weight and sufficiently flexible to fold back upon itself without fracture around a radius of curvature of 0.5 mm., from a fibrous cellulosic material, said process comprising:

contacting the said fibrous cellulosic material with an aqueous solution containing between 1–30% by weight of at least one impregnant selected from the group consisting of halides of zinc, aluminum, barium, calcium, magnesium and iron to impregnate the fibrous carbohydrate material with between 0.1 and 10% by weight of the said impregnant cations,

drying the impregnated fibrous cellulosic material at a temperature in the range of 100° to 140° C.,

flexing the fibres of the dried material to restore a major proportion of any flexibility lost during the impregnation and drying of the fibrous cellulosic material,

carbonizing the material by heating in an inert atmosphere to a carbonizing temperature through the critical decomposition temperature range which extends for between 40° C. and 80° C. within the temperature limits 70° C. and 300° C. and maintaining the temperature within the said critical temperature range for a time which is at least fifteen minutes for a critical temperature range of 40° C. increasing progressively to at least thirty minutes for a critical temperature range of 80° C., and

activating the carbonized material by contact at an activation temperature between 600° C. and 1000° C. with an activating gas selected from the group consisting of steam and carbon dioxide until the activate has a carbon tetrachloride sorbency of at least 50% by weight.

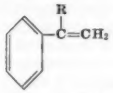
3,847,834

STABILIZED COMPLEXES OF ALKALI METAL AND ORGANIC COMPOUND AND METHOD FOR THEIR PREPARATION

Kent S. Dennis, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Oct. 24, 1973, Ser. No. 409,339
Int. Cl. C07f *1/04*
U.S. Cl. 252—43 R 12 Claims

1. A method of producing a complex of an organic compound of the formula



wherein R is phenyl or an alkyl having up to 4 carbon atoms and an alkali metal selected from the group consisting of sodium, potassium, rubidium, and cesium comprising contacting the organic compound and the alkali metal in a proportion of between about 0.5 and about 2 gram atomic weights of alkali metal per gram molecular proportion of organic compound at a temperature of between about 0° and about 50° C. in a solvent system comprising a major amount of hydrocarbon and a minor amount of ethylene glycol dimethyl ether.

3,847,835

PROCESS FOR MANUFACTURING A CATALYST, THE RESULTING CATALYST AND ITS USE IN A PROCESS FOR HYDROGENATING HYDROCARBONS

Jean Cosyns, Nanterre, France, assignor to Institut Francais du Petrole, des Carburants et Lubrifiants

Continuation-in-part of abandoned application Ser. No. 208,167, Dec. 15, 1971. This application May 1, 1973, Ser. No. 356,169
Claims priority, application France, Dec. 16, 1970, 7045509
Int. Cl. B01j *11/74*
U.S. Cl. 252—439 12 Claims

1. In a process for manufacturing a catalyst consisting essentially of an alumina carrier having a specific surface

of 120–500 m.²/g. and a pore volume of 0.2–0.9 cc./g. nickel sulfide or cobalt sulfide, and a sulfide of a group VIA metal, said sulfides being present in catalytic amounts, which process comprises impregnating the alumina carrier with a solution of compounds of said metals which form metallic oxides upon calcining; calcining the impregnated carrier; and sulfiding resultant calcined catalyst with a gas containing hydrogen sulfide, the improvement in said impregnating and calcining steps of: (1) impregnating said catalyst with a solution consisting essentially of a nickel or cobalt compound capable of forming an oxide upon calcining, drying and then calcining the impregnated product in the presence of air at 700–850° C.; and (2) impregnating resultant calcined product from step (1) with a solution consisting essentially of catalytic quantities of (a) a nickel of cobalt compound capable of forming an oxide upon calcining and (b) a compound of a group VIA metal capable of forming an oxide upon calcining, drying and then calcining the resultant impregnated product in air at 400–600° C., the amount of nickel or cobalt oxide incorporated in the carrier in the first step being sufficient to improve the stability of the catalyst so that the combination of steps (1) and (2) yields a catalyst having a higher stability during hydrogenation of diolefins than a corresponding catalyst prepared without the first high temperature calcining step.

3,847,836

NICKEL-URANIUM CATALYST

Thomas Nicklin, 39A Rochdale Road, Middleton, Manchester, England, and Frederick Farrington, Flat 4, Stanton St., Stretford, Lancashire, England

Continuation of application Ser. No. 8,359, Feb. 3, 1970, which is a continuation-in-part of application Ser. No. 651,116, July 5, 1967, which in turn is a continuation-in-part of application Ser. No. 432,899, Feb. 15, 1965, all now abandoned. This application July 11, 1972, Ser. No. 270,850

Int. Cl. B01j *11/06, 11/22*

U.S. Cl. 252—465 **7 Claims**

1. A catalyst composition suitable for use in the reforming of hydrocarbons with steam at an elevated temperature, which catalyst composition comprises:

(1) at least one member selected from the group consisting of nickel and nickel oxide,

(2) at least one member selected from the group consisting of uranoso-uranic oxide (U_3O_8) and uranium trioxide (UO_3), and

(3) a carrier,

the composition containing uranium, calculated as uranoso-uranic oxide or uranium trioxide, in an amount of from 5 to 30 percent based on the total weight of the catalyst composition, the ratio of uranium to nickel present in the catalyst composition, in the reduced form, being from about 0.45 to about 0.76:1, said catalyst composition having been produced in its oxidized form by impregnating the carrier with a solution of uranium and nickel salts and calcining said salts to the oxides.

3,847,837

CARBON DIOXIDE ABSORBENT GRANULES

Daniel A. Boryta, Downingtown, Pa., assignor to Foote Mineral Company, Exton, Pa.

No Drawing. Filed Apr. 25, 1972, Ser. No. 247,458

Int. Cl. B01j *11/00, 11/22, 11/32*

U.S. Cl. 252—468 **2 Claims**

1. Solid, particulate carbon dioxide absorbent granules selected from the group consisting of lithium hydroxide, barium hydroxide, calcium hydroxide, sodium hydroxide, lithium peroxide, sodium peroxide, lithium oxide, potassium superoxide and calcium oxide having finely-divided, non-hygroscopic metal oxide particles selected from the group consisting of titanium dioxide, zinc oxide, nickel oxide, stannic oxide, manganese sesquioxide, cobaltic oxide, lead oxide, ferric oxide, tungstic acid and chromic oxide adhering to the surface of said granules to render them substantially dust-free without substantially inhibiting the ability of the granules to absorb carbon dioxide, prepared by admixture of said absorbent granules with said non-hygroscopic metal oxide particles, said granules having adhering to the surface thereof from about 1 to about 25%, by weight, based on the combined weight of the carbon dioxide absorbent granules and adhering particles, of said metal oxide particles.

3,847,838

ANTISTATIC DISPERSION COMPRISING AT LEAST TWO KINDS OF ORGANIC SOLVENTS

Teiji Habu, Kyusaku Yoshida, and Kazuo Takahashi, Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Chuo-ku, Tokyo, Japan

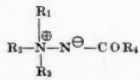
No Drawing. Filed Apr. 11, 1972, Ser. No. 243,449

Claims priority, application Japan, Apr. 17, 1971, 46/23,826

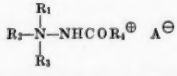
Int. Cl. G03c *1/82*

U.S. Cl. 252—500 **5 Claims**

1. An antistatic dispersion which comprises a protective colloid solution havnig dispersed therein a solution of an antistatic agent in at least two kinds of water-immiscible organic solvents having a lower specific gravity than the protective colloid substance, one kind of said solvents being selected from the Group A consisting of organic solvents of the phthalate, pyrrolidone and phosphate types and the other being selected from Group B consisting of benzyl alcohol, n-octyl alcohol, 2-ethylhexyl alcohol, n-decanol, heptadecanol, and glycerol wherein the antistatic agent is a compound selected from the group consisting of antistatic compounds having the general formulas



and



wherein R_1, R_2 and R_3 individually mean an alkyl or aralkyl group; R_4 is an alkyl group, an aryl group or a hetero ring; and A is a halogen atom or a group XO_4 or BX_4 where X is halogen.

ERRATUM

For Class 252—522 see:
Patent No. 3,847,975

3,847,839

ALKOXYLATED FURFURYL ALCOHOL STRIPPING COMPOSITION AND METHOD

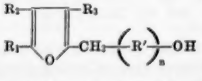
Donald P. Murphy, Madison Heights, and Henry Valatka, Detroit, Mich., assignors to Oxy Metal Finishing Corporation, Warren, Mich.

No Drawing. Filed Jan. 17, 1973, Ser. No. 324,281

Int. Cl. C11d *7/06, 7/32*

U.S. Cl. 252—544 **12 Claims**

1. A concentrate composition useful in paint stripping, consisting essentially of about 3–50 wt. percent of an accelerator consisting essentially of an alkoxylated furfuryl alcohol having the formula:



wherein R_1, R_2 and R_3 are independently selected from the group consisting of H, halogen and alkyl groups having not more than 6 carbon atoms; n is an integer not

exceeding 2; and R' is an alkoxy group having not more than 4 carbon atoms and about 50–97 wt. percent of an inorganic alkaline material containing a major portion of an alkali metal hydroxide.

3,847,840

MANUFACTURE OF ION-EXCHANGING SHAPED ARTICLES

Gerhard Kanig, Ludwigshafen, Germany, assignor to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed July 30, 1973, Ser. No. 383,893
Claims priority, application Germany, Aug. 2, 1970, P 22 37 953.9
Int. Cl. C08f *41/12*
U.S. Cl. 260—2.1 E **1 Claim**

1. A process for the manufacture of microporous ion-exchanging shaped articles which comprises mixing together (a) a polyolefin selected from the group consisting of polyethylene, polypropylene, polybutene-1, poly-4-methyl-1-pentene, polyisobutylene, a nethylene/propylene copolymer, an ethylene/butene-1 copolymer, an ethylene/isobutylene copolymer and mixtures thereof, (b) the particulate crosslinked polymer obtained by polymerizing a monomer selected from the group consisting of styrene, a styrene derivative, acenaphthylene and mixtures thereof in emulsion or suspension in the presence of an aromatic divinyl compound selected from the group consisting of 1,2-divinylbenzene, 1,3-divinylbenzene, 1,4-divinylbenzene and mixtures thereof and (c) an inert solvent of low volatility, processing the resulting mixture into a shaped article, removing said solvent of low volatility therefrom and introducing ion-exchanging groups into said shaped article.

3,847,841

THIOSEMICARBAZIDO HEAVY METAL ADSORBING RESINS

Kensuke Motani, Akihiko Nakahara, and Nobuyuki Kuramoto, Tokuyama, Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi-ken, Japan

No Drawing. Filed Mar. 7, 1973, Ser. No. 339,382
Claims priority, application Japan, Mar. 11, 1972, 47/24,424, 47/24,425, 47/24,426, 47/24,427
Int. Cl. C08f *27/06, 27/08*
U.S. Cl. 260—2.2 R **2 Claims**

1. A heavy metal adsorbing resin consisting essentially of a polymer comprising:

A. a backbone polymer selected from at least one of polystyrene, polyvinyl chloride, a copolymer of vinyl chloride with another copolymerizable monomer, a graft copolymer of a rubbery substance to which vinyl chloride has been grafted, and a chlorinated polyolefin; and

B. a moiety attached to the backbone polymer which is selected from at least one thiosemicarbazide of the group consisting of —NHNHCSNHR and —NHCSNHNHR, wherein R is a hydrogen atom, alkyl moiety, aryl moiety, or acyl moiety.

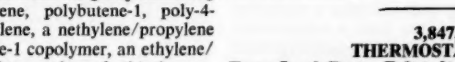
3,847,842

METAL-CHELATING AND SOLVENT-RESISTANT FILAMENTARY STRUCTURE AND PROCESS FOR ITS PRODUCTION

Hideaki Suzuki and Haruo Togawa, Tokyo, and Akira Omori and Naoki Yamamoto, Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

No Drawing. Filed June 26, 1973, Ser. No. 373,895
Claims priority, application Japan, June 30, 1972, 47/65,020
Int. Cl. C08f *27/06*
U.S. Cl. 260—2.2 R **6 Claims**

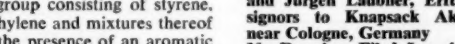
1. A solvent-resistant filamentary structure comprising at least 20% by weight of aromatic nuclear structural units derived from an aromatic monovinyl monomer, 2 to 40 out of 100 of said aromatic nuclear structural units being cross-linked by crosslinkages of the following formula (I)



(I)

wherein X and X' are the same or different and each represent aromatic nuclear structural units derived from an aromatic monovinyl monomer,

said filamentary structure not containing a crosslinkage expressed by the formula



wherein X is the same as defined above and X' is the same as defined above or a hydrogen atom,

and the remainder of said aromatic nuclear structural units, either partly or wholly, having incorporated therein a metal-chelating group.

3,847,843

THERMOSTABILIZERS

Franz-Josef Dany, Erftstadt Lechenich, Joachim Wortmann, Hurth, Joachim Kandler, Erftstadt Lechenich, and Jürgen Laubner, Erftstadt Liblar, Germany, assignors to Knapsack Aktiengesellschaft, Knapsack, near Cologne, Germany

No Drawing. Filed Jan. 4, 1973, Ser. No. 320,880
Claims priority, application Germany, Jan. 7, 1972, P 22 00 750.7
Int. Cl. C08g *22/44, 51/58*
U.S. Cl. 260—2.5 BB **5 Claims**

1. A process for stabilizing flame-proofing agent containing phosphorus and halogen in the production of polyurethane foam plastics, which comprises adding to a polyurethane foam forming reaction mixture having said flame-proofing agent therein at least one stabilizer selected from the group consisting of oleic acid ethylester, maleic acid dimethylester, dodecene-(1), oleyl alcohol and soy oil.

3,847,844

PROCESS FOR MAKING FIRE-RETARDANT POLYURETHANE FOAM USING CRUDE 4,4,4-TRICHLORO-1,2-EPOXYBUTANE

Stephen Fuzesi, Hamden, Conn., Milton Lapkin, Sudbury, Mass., and Roger J. Polak, Severna Park, Md., assignors to Olin Corporation

No Drawing. Continuation-in-part of application Ser. No. 113,761, Feb. 8, 1971, which is a continuation-in-part of application Ser. No. 872,359, Oct. 29, 1969, which in turn is a continuation-in-part of application Ser. No. 648,228, June 23, 1967, all now abandoned. This application Oct. 23, 1973, Ser. No. 408,637
Int. Cl. C08g *22/46, 22/16*
U.S. Cl. 260—2.5 AS **15 Claims**

1. In a process for preparing a polyurethane foam by reacting a polyether polyol with an organic polyisocyanate in the presence of a reaction catalyst and a foaming agent, said polyether polyol comprising the product of reacting 4,4,4, - trichloro - 1,2 - epoxybutane with a mixture of (1) dextrose and (2) water, a polyhydric aliphatic alcohol or a mixture of water and a polyhydric aliphatic alcohol, the improvement which comprises using said epoxybutane as a crude material having no more than about 5% by weight of volatile components and containing from about 15 to about 42% by weight of impurities and correspondingly from about 85 to about 58% of said epoxybutane, said crude epoxybutane being prepared by a process consisting essentially of

(a) reacting, at a temperature from about 35 to about 62° C., 4,4,4-trichloro-2-halobutanol with an aqueous solution of an alkali metal hydroxide or an alkaline earth metal hydroxide, said aqueous solution being employed in a sufficient proportion to provide at least a stoichiometric amount of hydroxide which is required to react with said 4,4,4, - trichloro - 2 -

halobutanol, thereby forming a two-phase reaction product mixture, namely, an aqueous phase and a non-aqueous phase containing said crude epoxybutane, and

(b) separating said two phases and recovering said crude epoxybutane.

3,847,845

SEPARATION AND PURIFICATION OF THE SAPONIFIED ETHYLENE-VINYL ACETATE INTERPOLYMERS

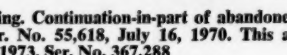
Rentaro Tada, Kenji Sato, and Kinichi Nishioka, Kurashiki, Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

No Drawing. Continuation-in-part of abandoned application Ser. No. 55,618, July 16, 1970. This application June 5, 1973, Ser. No. 367,288

Int. Cl. C08f *47/08*

U.S. Cl. 260—2.5 M **7 Claims**

1. A method of separating and purifying a saponified ethylene-vinyl acetate interpolymer from a substantially anhydrous solution containing 25 to 50 weight percent of said interpolymer which is obtained by saponification of an ethylene-vinyl acetate interpolymer having the general formula:



wherein R is hydrogen or methyl, R′ is —COOR, —C_6H_5, —Cl, —CN, methyl or vinyl; the ratio of $(Y+Z):X$ is within the range of 1.5:1 to 3:1 and the ratio $Z:Y$ is within the range of 0:1 to 0.1:1 under substantially anhydrous conditions and in the presence of methanol with 0.005 to 0.5 mols of an alkaline catalyst, based on the mol concentration of acetic acid radical in the interpolymer, the degree of saponification being at least 90 mol percent, which comprises:

(a) admixing water with said substantially anhydrous solution in an amount of at least 5 weight percent of the interpolymer up to an amount which does not cause gelation and separation of saponified interpolymer in said solution at the temperature of said solution, to produce an aqueous methanol solution having 15 to 45 weight percent of said saponified interpolymer,

(b) shaping said solution of saponified interpolymer into a sheet or strand of 1–10 mm. thickness and bringing said sheet or strand into contact with an aqueous coagulating bath to form a gelled microporous sheet or strand,

(c) washing said gelled microporous sheet or strand to remove the remaining alkaline catalyst and acetic acid salt produced during saponification, and

(d) drying said washed microporous sheet or strand.

3,847,846

COMPOSITION FOR PREPARING ELECTRO-CONDUCTIVE RESINS

Kiyohiko Asada, Hiratsuka, Japan, assignor to Kansai Paint Co., Ltd.

No Drawing. Filed June 13, 1972, Ser. No. 262,293

Claims priority, application Japan, July 1, 1971, 46/47,692

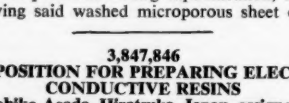
Int. Cl. C08f *3/50*

U.S. Cl. 260—13 **13 Claims**

1. A composition for preparing electroconductive resin which comprises:

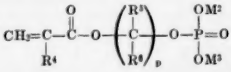
(a) one or more members selected from the group consisting of:

(I) compounds represented by the following general formula:



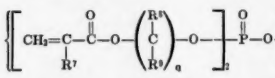
in which R^1 is a hydrogen atom or a methyl group; each of R^2 and R^3 is a hydrogen or halogen atom; n is an integer from 1 to 5; x is an integer from 1 to 3; and M^1 is a hydrogen atom, Na, Li, K, Ag, Cu, Mg, Ca, Zn, Ba, Al, ammonium or amine,

(II) compounds represented by the following general formula:



in which R^4 is a hydrogen atom or a methyl group; each of R^5 and R^6 is a hydrogen or halogen atom; p is an integer from 1 to 4;
and each of M^2 and M^3 is a hydrogen atom, Na, Li, K, Ag, ammonium or amine, and

(III) compounds represented by the following general formula:



in which R^7 is a hydrogen atom or a methyl group; each of R^8 and R^9 is a hydrogen or halogen atom; q is an integer from 1 to 4; x is an integer from 1 to 3; and M^4 is a hydrogen atom, Na, Li, K, Ag, Cu, Mg, Ca, Zn, Ba, Al, ammonium or amine, and

(B) compounds which contain vicinal epoxy groups in the molecules.

3,847,847

PROCESS FOR PREPARING PIGMENTED ACRYLIC DISPERSION LACQUER COATING COMPOSITIONS BY USING CELLULOSE ACETATE BUTYRATE RESIN

Gary W. Orvis, Flint, Mich., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,379

Int. Cl. C08b *21/08;* C09d *3/14, 3/80*

U.S. Cl. 260—17 R **9 Claims**

1. An improved process for preparing a pigmented acrylic resin dispersion lacquer coating composition which comprises the following steps:

(1) blending together the following constituents to form a pigment/polymer blend

15–50% by weight of a pigment;

15–35% by weight of cellulose acetate butyrate having a butyryl content of about 30–55% by weight and a viscosity at 25° C. of about 0.5–5 seconds measured according to ASTM D–1343–56;

15–55% by weight of a film-forming acrylic resin; and

0–20% by weight of an organic plasticizer for said acrylic resin;

(2) heating the pigment/polymer blend prepared in step (1) to about 30–110° C. while mixing and applying a vacuum of at least 20 inches of mercury to form a powder;

(3) mixing the powder under high shear conditions by charging the powder into a two roll mill having one hot roll at about 65–125° C. and a cold roll at about 0–30° C. for about 5–40 minutes while applying 75–400 foot pounds per gram of charge per minute to form pigment chips;

(4) forming a mill base having a solids content of about 20–60% by weight, by dissolving the chips prepared in step (3) in an organic solvent for the chips; and

(5) blending the mill base prepared in step (4) with an acrylic resin dispersion lacquer coating composition comprising 10–60% by weight of a film-forming

binder of an acrylic resin dispersed in an organic liquid to form a pigmented coating composition having a pigment to binder ratio of about 2:100 to about 70:100;

wherein said acrylic resin comprises

a graft copolymer having a backbone (A) and one or more side chains (B), the backbone (A) being a polymeric segment of units (a) and up to 15% by weight of units (b), said (b) units providing available active grafting sites for graft polymerization, and each side chain (B) above being a polymeric segment, (A) and (B) being different from each other, and (a) and (B) each being composed of at least 50% by weight of units of esters of acrylic, methacrylic and/or ethacrylic acid; and

wherein the graft copolymer is selected from the group consisting of

a copolymer prepared by polymerizing methyl methacrylate/allyl methacrylate/diethylamino methacrylate/2-ethyl hexyl acrylate to form a graft copolymer in which the (a) monomer units of the (A) segment consist of methyl methacrylate; and (b) monomer units of (A) segment consist of allyl methacrylate and diethylaminoethyl methacrylate, and the monomer units of (B) segment consists of 2-ethylhexyl acrylate; and

a copolymer prepared by polymerizing methyl methacrylate/isodecyl methacrylate/methacrylic acid/acrylonitrile to form graft copolymer in which the (a) monomer units of the (A) segment consist of methyl methacrylate, isodecyl methacrylate, methacrylic acid, and (b) monomer units of the (A) segment consist of allyl methacrylate and monomer units of the (B) segment consist of acrylonitrile.

3,847,848

TWO-PART ROOM TEMPERATURE VULCANIZABLE SILICONE RUBBER COMPOSITIONS

Melvin D. Beers, Ballston Lake, N.Y., assignor to General Electric Company

No Drawing. Filed Dec. 4, 1972, Ser. No. 311,487
Int. Cl. C08g *51/72*
U.S. Cl. 260—18 S **28 Claims**

1. A room temperature vulcanizable silicone rubber composition suitable for molding applications with deep section cure and knotty tear comprising:

(a) a base linear fluid organopolysiloxane containing terminal silicon-bonded hydroxy groups and having a viscosity of 1000 to 10,000,000 centipoise when measured at 25° C., the organic groups of said organopolysiloxane being selected from the class consisting of (I) a monomeric organo silicate corregenated monovalent hydrocarbon radicals, and cyanoalkyl radicals,

(b) from 1 to 15% by weight of a silicate based on the linear organopolysiloxane selected from the class containing of (I) a monomeric organo silicate corresponding to the general formula,

$$(R^5O)_3SiR^6$$

where R^5 is a radical selected from the class consisting of monovalent hydrocarbon radicals, halogenated monovalent hydrocarbon radicals and cyanoalkyl radicals, R^6 is selected from the class consisting of alkyl, haloalkyl, aryl, haloaryl, alkenyl, cycloalkyl, cycloalkenyl, cyanoalkyl, alkoxy and aryloxy radicals and (II) a liquid partial hydrolysis product of the aforementioned organosilicate,

(c) from 0.1 to 5% by weight based on the linear organopolysiloxane of a catalyst which is a metallic salt of an organic monocarboxylic or dicarboxylic acid in which the metal ion is selected from the class consisting of lead, tin, zirconium, antimony, iron, cadmium, barium, calcium, titanium, bismuth and manganese, and

(d) from 5% to 300% by weight based on the linear organopolysiloxane of a treated silica filler product prepared by intimately contacting per 100 parts of said silica filler having a surface area of at least 20 square meters per gram and containing from 0.2 to 2.0% by weight of moieties selected from the class consisting of hydroxyl groups, water and mixtures thereof with

(1) from ½ part to 5 parts of a hydroxyl amine having the formula,

$$R^1\text{—}\underset{\displaystyle R^2}{\overset{\displaystyle |}{N}}\text{—}OH$$

(2) from 2 to 25 parts of a cyclic siloxane of the formula,

$$(R_2^3SiO)_n$$

and

(3) from 1 to 20 parts of a silyl nitrogen compound of the formula,

$$(R_3^4Si)_aX$$

wherein the above additives are simultaneously contacted with said filler at a temperature in the range of 100 to 180° C. and (II) removing residual amounts of said additives from the filler, when R^1 is selected from the class consisting of monovalent hydrocarbon radicals, R^2, R^3 and R^4 are all selected from the class consisting of hydrogen, monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals, n varies from 3 to 4, a is a whole number that varies from 1 to 2, X is selected from the class consisting of —NR^5Y, —ONR_2^5, and

$$-\underset{\displaystyle Y}{\overset{\displaystyle |}{N}}-$$

where R^5 is selected from monovalent hydrocarbon radicals and halogenated monovalent hydrocarbon radicals and Y is selected from hydrogen and R^5 radicals.

3,847,849

WATER SOLUBLE RESINS AND PROCESS FOR THE PREPARATION THEREOF

Heinrich Lackner, Graz, Austria, assignor to Vianova-Kunstharz, A.G., Vienna, Austria

No Drawing. Filed Jan. 16, 1968, Ser. No. 698,108
Claims priority, application Austria, Jan. 19, 1967, A 541/67
Int. Cl. C08g *37/16, 37/32, 53/18*
U.S. Cl. 260—19 EP **25 Claims**

1. A process for producing water soluble synthetic resins comprising the steps:

(A) forming a water insoluble epoxy-free precondensate having reactive hydroxyl groups by reacting at an elevated temperature;

(1) a polyepoxide having an ether linkage and a maximum of two epoxide groups per molecule, said polyepoxide having a molecular weight of from 200 to 3,000.

(2) a heat reactive compound comprising a thermosetting material having a reactive hydroxyl group to preferentially react with said epoxide group selected from the group consisting of phenolic resins, aminoplast resins which are aldehyde condensation products of melamine, guanamines, urea, unetherified or etherified with mono- or polyhydric alcohols, and etherified and non-etherified methylol compounds of acryl amide and methacryl amide polymers,

(B) thereafter reacting the precondensate formed in (A) with a polycarboxylic acid having at least two carboxyl groups per molecule or anhydrides of said acid, the weight ratio between the precondensate and the polycarboxylic acid being sufficient to produce a reactive product having an acid number of from about 40 to 150;

(C) solubilizing the water insoluble reaction product of (B) by adding a nitrogen base thereby neutralizing the free carboxyl groups.

3,847,850

INK BINDER

Albert Rudolphy, Wiesbaden-Biebrich, Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Germany

No Drawing. Continuation of abandoned application Ser. No. 887,766, Dec. 23, 1969. This application Aug. 28, 1972, Ser. No. 284,066

Int. Cl. C08g *37/16, 37/20*

U.S. Cl. 260—20 **12 Claims**

1. A printing ink binder comprising the reaction product of (a) an oil modified alkyd resin derived from at least one of the phthalic acids selected from the group consisting of isophthalic acid, o-phthalic acid, and terephthalic acid, and from a mono- or polyhydric alcohol having up to 24 carbon atoms, said alkyd resin containing at least 60% by weight of at least one fatty acid or a drying or semi-drying oil; (b) a novolak having a melting point of at least 100° C.; and (c) a drying or semi-drying oil.

3,847,851

THERMOSETTING SYNTHETIC POLYMER DISPERSIONS AND PROCESS FOR PRODUCTION THEREOF

Hideyoshi Tugukumi, Sakai-shi, and Mitsuhiro Matsuda, Tondabayashi-shi, Japan, assignors to Dai Nippon Toryo Co., Ltd., Osaki-shi, Japan

Filed June 13, 1973, Ser. No. 369,765

Claims priority, application Japan, June 16, 1972, 47/60,215, 47/60,216

Int. Cl. C08f *45/28;* **C09d** *3/48*

U.S. Cl. 260—22 CB **10 Claims**

1. A thermosetting synthetic polymer dispersion comprising a mixture of

(I) a synthetic polymer dispersion comprising particles of a copolymer formed from (A) a copolymerizable ethylenically unsaturated monomer and (B) a copolymerizable ethylenically unsaturated monomer having a chemically reactive cross-linking group and a protective layer formed around said copolymer particles, which is composed of a stabilizer (i) having a component compatible with said copolymer or beng chemically bonded thereto and (ii) being solvated in an organic liquid having no polarity or a low polarity, said copolymer particles being stably dispersed in the organic liquid by said protective layer and having an average particle size of 0.1 to 10μ, and

(II) a synthetic polymer dispersion comprising particles of a copolymer formed from (A) a copolymerizable ethylenically unsaturated monomer and (C) a copolymerizable ethylenically unsaturated monomer having a complementary, chemically reactive cross-linking group capable of reacting with the chemically reactive cross-linking group of the particles in dispersion (I) and a protective layer formed around said copolymer particles, which is composed of a stabilizer (i) having a component compatible with said copolymer or being chemically bonded thereto and (ii) being solvated in an organic liquid having no polarity or a low polarity, said copolymer particles being stably dispersed in the organic liquid by said protective layer and having an average particle size of 0.1 to 10μ.

3,847,852

OUTDOOR DEGRADABLE HYDROCARBON PLASTIC

Roy A. White, Somers, Conn., and Stanley A. Margosiak, Springfield, Mass., assignors to De Bell & Richardson, Inc., Enfield, Conn.

No Drawing. Filed Aug. 23, 1972, Ser. No. 282,946

Int. Cl. C08f *45/04, 45/14*

U.S. Cl. 260—23 H **6 Claims**

1. An ultraviolet degradable plastic article consisting essentially of:

(a) 100 parts by weight of hydrocarbon resin consisting of at least 65% of the monomers propylene, butylene, pentene or hexene content, said resin being a homopolymer of one of said monomers, an interpolymer of two or more of said monomers, or an interpolymer of one or more of said monomers with up to 35% ethylene;

(b) from a minimum in the range of 0.1 to 1 part to a maximum in the range of 8–15 parts by weight of a U.V. sensitizer-promoter selected from the group consisting of

(1) Oxides of the elements silicon, tin, lead, aluminum, bismuth, antimony and magnesium; and oxides of said elements dispersed by fatty or rosin acid;

(2) Silicates of Group IIA of the Periodic Table; silicates of aluminum, bismuth, antimony, tin, and lead; and silico aluminates of Group IA;

(3) Sulfates of barium, strontinum, calcium and lead; and basic sulfates of bismuth and antimony;

(4) Carbonates of Group IIA; and carbonates of aluminum, tin, lead, bismuth and antimony;

(5) Phosphates of Group IIA; and phosphates of aluminum, tin, lead, bismuth and antimony;

(6) Fatty acid metal salts wherein the metal is aluminum, tin, lead, antimony, bismuth or a metal of Group IIA or Group IIB of the Periodic Table, and the fatty moiety is oleic acid or an acid moiety of the formula

$$-\overset{\overset{O}{\|}}{C}-(CH_2)_3-$$

$(CH_2)_{1-18}H$; or hydroxystearic acid;

said minimum quantity being 1 part by weight for said groups (1) to (5) and sufficient to provide a surface area per 100 grams of resin of at least 10 m.², and being 0.1 parts by weight for said group (6);

said maximum quantity of group (6) being 15 parts by weight and of group (1) to (5) being determined by the U.V. screening power of said sensitizer-promotor as determined from the refractive index according to the formula:

$$15-17.1\ (\text{refractive index minus } 1.7)\ \text{times}\ \frac{(\text{thickness of article in thousandths of an inch})}{0.020};$$

said sensitizer-promoter having a very fine particle size no greater than 3.4μ and sufficiently fine to provide an external surface area no less than 0.7 m.²/gm. of said sensitizer-promoter, and—for members of the groups (1) to (5) having a refractive index greater than 1.564—sufficiently fine so that the surface area of the sensitizer-promoter particles is at least equal to

$$A=10^{2.44\ (\text{refractive index minus } 1.564)}\ \text{m.}^2/\text{gm.};$$

and wherein said article is essentially U.V. transparent and has a maximum thickness of about 80 mils.

3,847,853

PROCESS FOR THE PREPARATION OF VINYL CHLORIDE RESINS HAVING GOOD THERMAL STABILITY

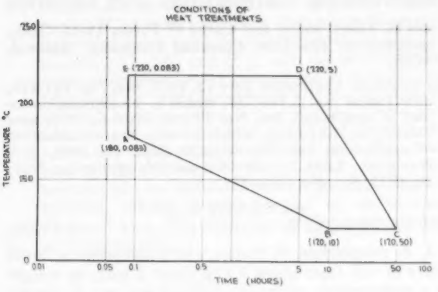
Tsunao Suzuki, Yokohama, Mitsushi Senuma, Chigasaki, Ichiro Takakura, Yokohama, and Toshio Masuda, Tokyo, Japan, assignors to Nippon Zeon Company, Ltd., Tokyo, Japan

Continuation-in-part of application Ser. No. 102,882, Dec. 30, 1970. This application Oct. 24, 1972, Ser. No. 300,111

Claims priority, application Japan, Dec. 30, 1969, 45/105,484

Int. Cl. C08f *3/30, 45/58*

U.S. Cl. 260—23 XA 5 Claims



1. A process for the preparation of vinyl chloride resins having excellent thermal stability, which comprises:

(A) heat treating a vinyl chloride resin with 30 to 1,000 parts by weight per 100 parts by weight of the vinyl chloride resin of at least one compound selected from the group consisting of water, methanol, ethanol, propanol, butanol, pentanol, hexanol, ethylene glycol, propylene glycol, and glycerine, under the temperature and time conditions shown in the accompanying drawing by a pentagonal region formed by connecting points A, B, C, D, and E, wherein

(1) point A represents a temperature of 180° C. and a time of 0.083 hours,

(2) point B represents a temperature of 120° C. and a time of 10 hours,

(3) point C represents a temperature of 120° C. and a time of 50 hours,

(4) point D represents a temperature of 220° C. and a time of 5 hours,

(5) point E represents a temperature of 220° C. and a time of 0.083 hours, and

(B) thereafter removing the compound or mixture of compounds from the reaction system.

3,847,854

PREFERENTIAL PLASTICIZATION OF IONOMETRIC COMPOUNDS

Nathan H. Canter, Edison, and Donald J. Buckley, Sr., Plainfield, N.J., assignors to Esso Research and Engineering Company

No Drawing. Continuation of abandoned application Ser. No. 103,902, Jan. 4, 1971. This application July 27, 1973, Ser. No. 383,350

Int. Cl. C08d *11/02*

U.S. Cl. 260—23.7 M 14 Claims

1. A composition of matter consisting essentially of an ionically cross-linked sulfonated elastomeric polymer in combination with a preferential plasticizer, said plasticizer being dispersible in but not completely molecularly soluble in said polymer, being liquid during processing of said polymer, having a melting point at least 25° above the contemplated use temperature of said polymer and not more than 50° below a preselected processing temperature for said polymer and having at least one functional constituent which exhibits a bond moment whose absolute value is at least 0.6 Debyes wherein said functional constituent may be independently selected from the group consisting of C—O, P—O, S—H, C—Cl, C—Br, C—F, C—I, S=O, and N—O; provided, however, where said preferential plasticizer is a volatile plasticizer said plasticizer is normally liquid at ambient temperatures and has a boiling point with an upper limit in the range of about 120° to about 190° C. and it is incorporated into the composition at about 0.25 to about 15 wt. percent based on the ionically cross-linked polymer and where the preferential plasticizer is a non-volatile plasticizer it is incorporated into the composition at about 0.5 to about 4 wt. percent based on the ionically cross-linked polymer.

3,847,855

WATER-BORNE LATICES

Thomas Larry Dawson, Charleston, W. Va., assignor to Union Carbide Corporation, New York, N.Y.

No Drawing. Filed Dec. 7, 1972, Ser. No. 312,898

Int. Cl. C08c *11/72*; C08d *9/14*

U.S. Cl. 260—23.7 A 12 Claims

1. In a process for the production of water-based latices of copolymers of hard monomers and soft monomers useful as coating compositions, the steps of homogenizing an aqueous mixture consisting essentially of (i) said monomers, (ii) a monomer-soluble initiator and (iii) an anionic ammonium salt of a fatty acid of from 10 to 26 carbon atoms as the fugitive type surfactant at a temperature below the polymerization temperature of said mixture, heating and stirring said homogenized aqueous mixture at a polymerization temperature sufficient to cause said monomers to undergo polymerization, and recovering the copolymer latex; said hard monomer being a monomer whose homopolymer has a glass transition temperature greater than 40° C. and said soft monomer being a monomer whose homopolymer has a glass transition temperature less than 40° C.

3,847,856

PAPER COATING COMPOSITIONS

Gerhart Hermann Mueller, 7 An der Froschlache, and Kurt Wendel, 8 Beethovenstrasse, both of 6700 Ludwigshafen, Germany

No Drawing. Filed Sept. 25, 1972, Ser. No. 291,660

Int. Cl. C08f *29/50, 33/08*

U.S. Cl. 260—29.6 RB 6 Claims

1. An aqueous paper coating composition containing, for every 100 parts by weight of finely divided pigment, from 2 to 25 parts by weight of a synthetic binder comprising polymers of monovinyl aromatic monomers and acrylates of C_{1-12} non-tertiary alkanols and/or methacrylates of C_{4-12} alkanols, wherein the binder consists of

(A) a mixture of

(a) an emulsion polymer of from 65 to 100% by weight of a mixture of monovinyl aromatic monomers and from 0 to 20% by weight of said monomers of acrylonitrile, from 0 to 35% of acrylates and/or methacrylates and from 0 to 10% by weight of olefinically unsaturated monomers containing reactive groups selected from the group consisting of monoethylenically unsaturated carboxylic acids containing 3 to 5 carbon atoms, their mono- and di-N-alkylamides, N-methylolamides, etherified N-methylolamides, maleic half esters and itaconic half esters, and

(b) an emulsion polymer of from 80 to 100% by weight of acrylates and/or methacrylates, from 0 to 20% by weight of monovinyl aromatic

monomers and/or acrylonitrile and from 0 to 10% by weight of olefinically unsaturated monomers containing reactive groups selected from the group consisting of monoethylenically unsaturated carboxylic acids containing 3 to 5 carbon atoms, their mono- and di-N-alkylamides, N-methylolamides, etherified N-methylolamides, maleic half esters and itaconic half esters, and/or

(B) a polymer (c) which has been prepared in two stages and wherein monomers of polymer (b) or (a) have been emulsion polymerized in an aqueous dispersion of a polymer (a) or (b) respectively in the same quantities as those used in the manufacture of said polymers (b) or (a),

the proportions of polymer (a) and polymer (b) and the proportions of the first and second stages of polymer (c) being such that the total quantities of monomers used are equal to the amounts of said monomers contained in a conventionally prepared random copolymer having a glass temperature of from −20° to +30° C.

3,847,857

STAIN RESISTANT COATING COMPOSITION

Thomas H. Haag, Feasterville, and Benjamin B. Kine, Elkins Park, Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

No Drawing. Continuation-in-part of application Ser. No. 263,375, June 5, 1972, which is a continuation-in-part of application Ser. No. 49,190, June 23, 1970, which in turn is a continuation-in-part of application Ser. No. 679,973, Nov. 2, 1967, all now abandoned. This application Nov. 5, 1973, Ser. No. 412,846

Int. Cl. C09d *3/74*

U.S. Cl. 260—29.6 RW **25 Claims**

1. An aqueous coating composition comprising

(1) a binder of a stable aqueous dispersion of a water-insoluble addition polymer, the dispersed particles of which have a size in the range of 0.05 to 1.0 microns, selected from vinyl ester polymers, acrylic and methacrylic ester polymers or vinylhydrocarbon polymers and

(2) from about 1 to 50% by weight, based on the weight of binder, of

(A) a sedimentation stably dispersed, cross-linked, water-insoluble vinyl addition emulsion copolymer, having a particle size in the range of 0.05 to 0.3 microns, of a mixture of

(a) from about 5 to 70% by weight of one or more monoethylenically unsaturated monomers containing an amine or quaternary ammonium group in base form,

(b) from about 1 to 50% by weight of one or more cross-linking polyethylenically unsaturated monomers having at least two non-conjugated points of ethylenic unsaturation and

(c) from 0 to about 89% by weight (to make 100%) of at least one monoethylenically unsaturated monomer of neutral or nonionic character or

(B) a sedimentation stably dispersed, water-insoluble linear or cross-linked vinyl addition emulsion copolymer, having a size in the range 0.05 to 0.3 microns, of a mixture of

(a) from about 5 to 70% by weight of one or more monoethylenically unsaturated monomers containing an amine or quaternary ammonium group in salt form, the counterions of the salt being derived from boron, chromium, molybdenum or tungsten,

(b) from 0 to 50% by weight of one or more cross-linking polyethylenically unsaturated monomers having at least two non-conjugated points of ethylenic unsaturation, and the balance

(c) to make 100%, of one or more monoethylenically unsaturated monomers of neutral or nonionic character, the non-volatile content of the composition being from about 30 to 70% by weight.

3,847,858

CEMENTITIOUS COMPOSITIONS AND METHODS

Louis H. Eilers, Inola, and Christ F. Parks, Tulsa, Okla., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Application July 12, 1971, Ser. No. 161,875, now Patent No. 3,746,725, which is a continuation-in-part of application Ser. No. 17,290, Mar. 6, 1970, now Patent No. 3,624,018, which in turn is a continuation of application Ser. No. 486,530, Sept. 10, 1965, now Patent No. 3,511,313. Divided and this application Nov. 21, 1972, Ser. No. 308,490

Int. Cl. C08f *45/34*

U.S. Cl. 260—33.2 R **6 Claims**

1. A composition of matter which comprises a liquid slurry of (a) from about 0.1 to about 2 parts by weight of a water-soluble carbamoyl polymer per part by weight of a liquid, gel forming organo solvent therefor composed of a liquid organic non-solvent for the polymer selected from the group consisting of propylene glycol, water-miscible alkylene oxide polymers having molecular weight up to about 600 and water-miscible alkyl and aryl ethers of the polymers wherein the etherifying moiety contains from 1 to 12 carbons and (b) at least about 0.05 part by weight per part by weight of the non-solvent, of an organic solvent for the polymer, the amount of the latter being sufficient to render the liquid mixture a solvent for the polymer, said organic solvent being pentaerythritol.

3,847,859

RAPID-SETTING POLYURETHANES CONTAINING SUBSTITUTED HYDROXYL-CONTAINING AROMATIC COMPOUNDS AS MODIFIERS

Franciszek Olstowski, Freeport, Tex., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Aug. 29, 1973, Ser. No. 392,591

Int. Cl. C08g *51/34*

U.S. Cl. 260—33.4 UR **8 Claims**

1. A solid, rigid, non-cellular urethane polymer having a density of at least about 1 gram/cc. resulting from admixture of the components of a composition comprising

A. an active hydrogen-containing component selected from

(1) a polyether polyol having a hydroxyl equivalent weight of between about 75 and about 230 and containing from 3 to about 8 hydroxyl groups per molecule,

(2) a dihydroxyl-containing compound having a hydroxyl equivalent weight of less than about 250, and

(3) mixtures thereof;

B. an organic polyisocyanate;

C. a modifier component which moderates the reaction between Components (A) and (B) without substantial reaction therewith comprising

(1) 50–100% by weight of, as a modifier, a substituted aromatic compound containing at least

one aromatic hydroxyl group and at least one substituent which contains at least 3 carbon atoms attached to each irng containing an aromatic hydroxyl group or mixtures thereof; and

(2) 0–50% by weight of a co-modifier selected from

(a) organic liquid compounds having a boiling point above about 150° C.,

(b) liquid halogenated aliphatic compounds containing a hydroxyl group and having a boiling point of less than about 150° C., or

(c) mixtures thereof;

D. a non-amine catalyst for urethane formation; wherein components (A) and (B) are present in quantities such that the NCO:OH ratio is from about 0.8:1 to about 1.5:1; the quantities of component (C) being from about 10 to about 50 percent by weight based upon the combined weight of components (A), (B) and (C); with the provision that when component (A–2) is employed as the sole component of (A) then component (B) has a functionality of at least about 2.5; and when component (A–1) is an amine initiated polyol and is employed as the sole component of component (A), then component (D) need not be present; and wherein said polymer can be demolded within less than about 5 minutes, without the application of an external source of heat, after admixture of the components of said composition.

3,847,860

ADHESIVE AGENTS COMPRISING PHENOLIC RESINS AND A MIXTURE OF SILANES

Claus-Dieter Seiler, Rheinfelden, Hans-Joachim Vahlensieck, Wehr, Baden, and Hans Junger, Troisdorf, Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, West Germany

No Drawing. Continuation of abandoned application Ser. No. 90,214, Oct. 29, 1970. This application May 8, 1973, Ser. No. 358,752

Claims priority, application Germany, Oct. 29, 1969, P 19 54 354.5

Int. Cl. C08g *51/04;* **C08k** *1/02*

U.S. Cl. 260—38 **15 Claims**

1. A composite shaped article consisting essentially of an inorganic material having an oxidic surface containing an hydroxyl group and a mixture of at least two distinct silanes, one of which is an aminopropyltrialkoxysilane and another of which is bis-aminopropyltrialkoxysilane or tris-aminopropyltrialkoxysilane, the alkyl group of said silanes having 1 to 3 carbon atoms therein which each silane contributing at least 5 weight percent to the mixture, said composite article containing a thermo or cold setting phenolic resin or thermo or cold setting phenolic resin modified by urea or thermo or cold setting phenolic resin modified by a furan compound selected from the group consisting of furfuryl alcohol and furfural.

3,847,861

POLYETHYLENE TEREPHTHALATE

Theodore Largman, Morristown, and Herman Stone, Convent Station, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 180,516, Sept. 14, 1971. This application Mar. 12, 1973, Ser. No. 340,636

Int. Cl. C08g *51/04*

U.S. Cl. 260—40 R **12 Claims**

1. A composition comprising:

(a) polyethylene terephthalate

(b) from 0.5 to 10 weight percent of finely particulate red phosphorus

(c) from 2.0 to 5.0 weight percent of a metal oxide selected from the group consisting of MgO, TiO_2, ZnO, MoO_3, Al_2O_3, Zr_2O_3, Cr_2O_3, Wo_2O_3, B_2O_3, MnO_2, CdO, SnO, Pb_2O_3, Bi_2O_3, Sb_2O_5.

3,847,862

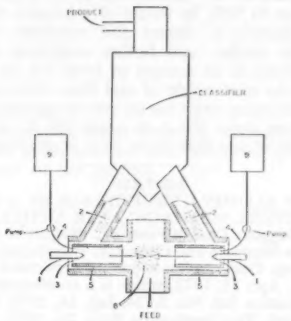
RUBBER COMPOSITIONS CONTAINING FINELY DIVIDED CARBON TREATED WITH METHANOL

William W. Gotshall, Orchard Lake, Mich., assignor to Marathon Oil Company, Findlay, Ohio

Application Aug. 10, 1970, Ser. No. 62,688, which is a continuation-in-part of application Ser. No. 666,011, Sept. 7, 1967. Divided and this application Mar. 24, 1972, Ser. No. 237,818

Int. Cl. C08c *11/18*

U.S. Cl. 260—41.5 R **4 Claims**



1. Vulcanizable rubber formulations containing at least 10% by weight of finely divided carbon product produced by a process comprising comminuting coke in a non-oxidizing atmosphere to an average particle size below about 2.5 microns and contacting it with from about 0.1 to about 10% based on the weight of the coke, of methanol during or after said comminuting, wherein the finely divided coke particles are thereafter protected from oxidation until compounded with said polymeric materials.

3,847,863

THERMOSET MOLDING POWDERS EMPLOYING GLYCIDYL METHACRYLATE-FUNCTIONAL POLYMERS AND MONOMERIC ANHYDRIDE CROSSLINKING AGENTS AND MOLDINGS THEREOF

Santokh S. Labana, Dearborn Heights, and Ares N. Theodore, Farmington, Mich., assignors to Ford Motor Company, Dearborn, Mich.

No Drawing. Continuation of abandoned application Ser. No. 209,346, Dec. 17, 1971. This application Feb. 15, 1974, Ser. No. 443,184

Int. Cl. C08f *45/10*

U.S. Cl. 260—42.18 **24 Claims**

1. A molding powder which comprises a particulate, intimate mixture of

(a) a copolymer

(1) consisting of about 15 to about 40 weight percent glycidyl methacrylate, about 10 to about 30 weight percent methacrylonitrile, and a remainder consisting essentially of methyl methacrylate, and

(2) having an average molecular weight in the range of about 1,500 to about 16,000, with less than 5 percent of the molecules of such copolymer having a molecular weight below 1,000, a softening point above 25° C., and epoxide groups in its molecular structure resultant of inclusion of said glycidyl methacrylate as a constituent monomer thereof, and

(b) a monomeric anhydride present in an amount which provides about 0.5 to about 1.5 anhydride groups per each epoxy group in the molding powder.

3,847,864

FIRE RESISTANT ACRYLONITRILE POLYMER ARTICLES CONTAINING SUBMICRON ANTIMONY OXIDE PARTICLES

John Donald Chase, Stamford, and Robert Louis Potter, Wilton, Conn., assignors to American Cyanamid Company, Stamford, Conn.

No Drawing. Continuation-in-part of application Ser. No. 91,573, Nov. 20, 1970, now Patent No. 3,743,708. This application Feb. 12, 1973, Ser. No. 331,409

Int. Cl. C08f *45/56, 45/58*

U.S. Cl. 260—45.75 B 3 Claims

1. An acrylonitrile polymer fiber containing an average of at least about 50% acrylonitrile in the polymer molecule and up to 50% by weight of a halogen containing material known to impart fire resistance to polyacrylonitrile articles, and further containing antimony oxide particles in an amount of from 1% to 20% by weight of the total weight of said fiber, characterized in that said antimony oxide has an average particle diameter ranging from about 100 A. to about 300 A., whereby a lustre index of said fiber above 30% is obtained.

3,847,865

USE OF ALUMINA TRIHYDRATE IN A POLYMETHYL METHACRYLATE ARTICLE

Ray B. Duggins, Chadds Ford, Pa., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 248,577, Apr. 28, 1972, which is a continuation-in-part of application Ser. No. 3,524, Jan. 16, 1970, both now abandoned. This application Sept. 26, 1973, Ser. No. 401,074

Int. Cl. C08f *45/04*

U.S. Cl. 260—42.52 1 Claim

1. In a simulated marble article formed from: a first material comprising a first polymer of methyl methacrylate in which is distributed and suspended at least one relatively smaller elongated substantially continuous coherent, independent mass of a second material comprising a polymer of methyl methacrylate and having a pigmentation differing from that of said first material, said smaller mass being disposed in a predetermined, repetitive, reproducible, irregular, three-dimensional configuration throughout said article, and between 20–85% by weight of an inorganic additive; the improvement wherein said inorganic additive is alumina trihydrate and said article is translucent to the point where differences in pigmentation other than differences in pigmentation on the surface of said article are apparent and contribute to the marbleizing effect.

3,847,866

BIS-(P-HYDROXYPHENYL) ALKYLPHOSPHONIC ACID ESTERS

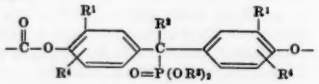
Hellmut F. I. Bredereck, 149 Zeppelin St., 7000 Stuttgart, Germany; Miltiadis I. Iliopulos, 1503 28th St., Vienna, W. Va. 26101; and Horst F. Wieder, 2300 Amy Ave., Kingsport, Tenn. 37664

No Drawing. Application Jan. 14, 1970, Ser. No. 2,938, now Patent No. 3,702,879, which is a continuation-in-part of abandoned application Ser. No. 471,465, July 12, 1965. Divided and this application Nov. 13, 1972, Ser. No. 305,878

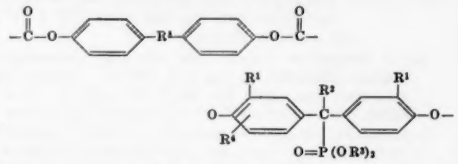
Int. Cl. C08g *17/13*

U.S. Cl. 260—47 XA 1 Claim

1. A film forming polymer selected from the group consisting of polymers consisting essentially of the recurring group



wherein R^1 is hydrogen, halogen, alkyl, or haloalkyl, R^2 is alkyl, haloalkyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl; R^3 is hydrogen, alkyl, haloalkyl, alkenyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl; R^4 is hydrogen, halogen, hydroxy, alkyl, haloalkyl, cycloalkyl, halocycloalkyl, arylalkyl, haloarylalkyl, aryl, or haloaryl, and said R groups contain up to 26 carbon atoms, and polymers consisting essentially of the recurring group



where R^1, R^2, R^3, and R^4 are as defined above and R_5 is alkylene.

3,847,867

POLYETHERIMIDES

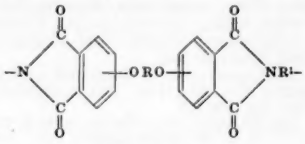
Darrell R. Heath, Pittsfield, Mass., and Joseph G. Wirth, Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

No Drawing. Continuation-in-part of application Ser. No. 108,151, Jan. 20, 1971, now Patent No. 3,787,475. This application Dec. 29, 1972, Ser. No. 319,327

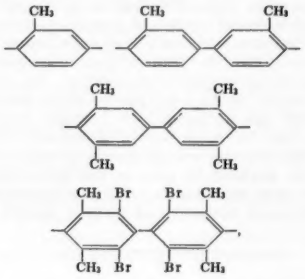
Int. Cl. C08g *20/32*

U.S. Cl. 260—47 CP 30 Claims

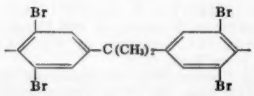
1. Polyetherimide consisting essentially of chemically combined units of the formula,



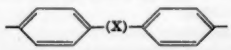
where R is a member selected from the class consisting of (a) the following divalent organic radicals:



and

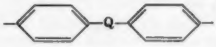


and (b) divalent organic radicals of the general formula,

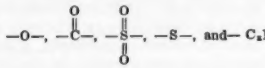


where X is $-C_yH_{2y}-$, y is a whole number equal to from 1 to 5 inclusive, and R^1 is a divalent organic radical se-

lected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals and cycloalkylene radicals having from 2–20 carbon atoms, (c) $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (d) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



and x is a whole number equal to from 1 to 5 inclusive.

3,847,868

POLYOXETANES WHICH CAN BE USED IN PEPTIDE SYNTHESIS

Jean Bouchaudon, Essonne, Guy Bourat, Hauts-de-Seine, and Rodolphe Margraff, Essonne, France, assignors to Rhone-Poulenc S.A., Paris, France

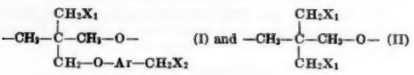
No Drawing. Filed Feb. 23, 1973, Ser. No. 335,177

Claims priority, application France, Feb. 28, 1972, 7206696

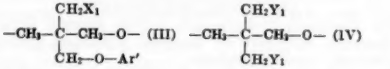
Int. Cl. C08g *23/04*

U.S. Cl. 260—47 R **9 Claims**

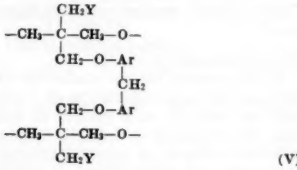
1. A polyoxetane which consists essentially of a plurality of units of the formula:



and, optionally, of units of at least one of the formulae:



and



in which:

each of X_1 and X_2, which may be identical or different, represents a chlorine or bromine atom,

Y is as defined under X_1 or represents a radical of formula: —O—Ar—CH_2X_2 or —O—Ar',

each of the Y_1 radicals, which may be identical or different, represents a —O—Ar' or —O—Ar—CH_2X_2 radical,

Ar represents a divalent aromatic radical, the two free valencies of which are carried by carbon atoms of one or two aromatic benzene rings, and

Ar' represents the radical —ArH,

the units (I) to (V) being connected to one another via the oxygen atom with a free valency of one of the units and a methylene group with a free valency of the adjacent unit.

3,847,869

METHOD FOR PREPARING POLYETHERIMIDES

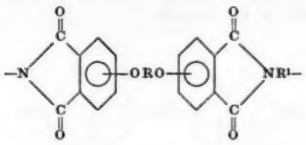
Frank J. Williams III, Scotia, N.Y., assignor to General Electric Company

No Drawing. Filed Sept. 28, 1973, Ser. No. 401,865

Int. Cl. C08g *20/00, 25/00*

U.S. Cl. 260—47 CZ **4 Claims**

1. A method for making polyetherimide consisting essentially of chemically combined units of the formula

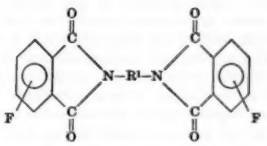


which comprises

(1) effecting reaction between substantially equal molar amounts of an alkali metal salt of a dihydric phenol of the formula,

MOROM,

and a bisimide of the formula,

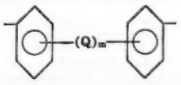


in the presence of a dipolar aprotic organic solvent at a temperature of up to about 100° C.,

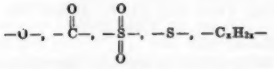
(2) thereafter effecting the precipitation of the polyetherimide from the mixture of (1),

(3) and recovering the polyetherimide from the mixture of (2),

where R is a divalent aromatic organic radical having from about 6–30 carbon atoms, R^1 is a divalent organic radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(1-8)}$ alkylene terminated polydiorganosiloxane, cyclo-alykylene radicals having from 3–20 carbon atoms, and (c) divalent radicals included by the formula,



where Q is a member selected from the class consisting of



and x is a whole number from 1 to 5 inclusive, m is 0 or 1, and M is an alkali metal ion.

3,847,870

METHOD FOR MAKING POLYETHERIMIDES

Tohru Takekoshi, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

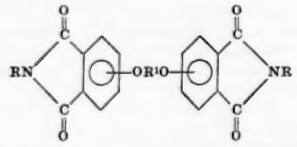
No Drawing. Filed Nov. 23, 1973, Ser. No. 418,381
Int. Cl. C08g 20/32
U.S. Cl. 260—47 CP 11 Claims

1. A method for making a polyetherimide which comprises

(1) effecting the distillation of organic amine of the formula

$$RNH_2$$

from a melt consisting essentially of a mixture of bisimide of the formula

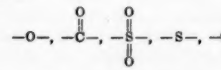


and at least an equal molar amount of such bisimide of an organic diamine of the formula

$$NH_2—R^2—NH_2$$

in the presence of an effective amount of a catalyst, selected from the class consisting of an alkali metal, a basic alkali metal compound, an alkaline earth metal and a basic alkaline earth metal compound, where the vapor pressure of the organic amine is greater under atmospheric conditions than the vapor pressure of the organic diamine, where R is a monovalent $C_{(2-20)}$ organic radical selected from $C_{(2-8)}$ alkyl radicals and $C_{(6-20)}$ aromatic radicals, R^1 is selected from $C_{(6-30)}$ aromatic radicals, and R^2 is a divalent organo radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated derivatives thereof, (b) alkylene radicals, $C_{(2-8)}$ alkylene terminated polydiorganosiloxane cyclo-alkylene radicals having from 2–20 carbon atoms, and (c) divalent radicals included by the formula,

where Q is a member selected from the class consisting of



and x is a whole number from 1 to 5 inclusive, and m is 0 or 1.

3,847,871

POLYMERS AND COPOLYMERS OF 1-FERROCENYL-1,3-BUTADIENE

William D. Stephens, 8912 Willow Hill Drive SE.; and T. Chade Willis, 2020 Golf Road, Apt. 325, both of Huntsville, Ala. 35802; and Charles S. Combs, 669 Larkwood, Holland, Mich. 49423

No Drawing. Filed May 11, 1972, Ser. No. 252,390
Int. Cl. C08f 25/00
U.S. Cl. 260—63 BB 16 Claims

1. As a composition of matter, homopolymers of 1-ferrocenyl-1,3-butadiene prepared by reacting 1-ferrocenyl-1,3-butadiene with a catalyst, in the presence of a solvent, at a temperature of from about −79° to 90° C., for a period of from about 1 minute to 4 hours.

3,847,872

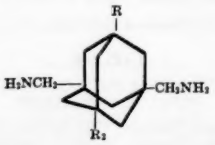
WATER WHITE POLYIMIDE POLYMER PREPARED FROM DI(AMINOMETHYL)-DIALKYLADAMANTANES

Robert M. Thompson, Wilmington, Del., assignor to Sun Ventures, Inc., St. Davids, Pa.

No Drawing. Continuation-in-part of application Ser. No. 191,700, Oct. 22, 1971. This application May 10, 1973, Ser. No. 359,173
Int. Cl. C08g 20/32
U.S. Cl. 260—65 14 Claims

1. Method for the preparation of a solid polyimide polymer comprising:

(a) contacting essentially equal mole amounts of a dianhydride selected from the group consisting of dianhydride of 1,2,4,5-benzene-tetracarboxylic acid and 3,4,3′,4′ - benzophenonetetracarboxylic dianhydride and a dialkyladamantane diamine of the following structure:



where each of R_1 and R_2 is alkyl radical having 1–10 carbon atoms in the presence of a suitable polar organic solvent at a temperature of 0° C.–30° C., and maintaining said contacting until the desired viscosity is obtained; afterwards,

(b) removing said solvent at a temperature below the condensation temperature of the resulting polyimic acid; and after removal,

(c) heating the polyimic acid to a temperature of about 150° C.–500° C. until condensation is completed; whereby resulting solid polyimide is clear and water white.

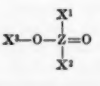
3,847,873

PROCESS FOR THE PREPARATION OF AROMATIC POLYESTERS

Peter Frederick Jackson and Arthur Morris, Runcorn, England, assignors to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Nov. 1, 1972, Ser. No. 302,672
Claims priority, application Great Britain, Nov. 12, 1971, 52,596/71
Int. Cl. C08g 17/015
U.S. Cl. 260—75 R 12 Claims

1. In a process for the production of highly polymeric polyester by polycondensation of a polycondensable material at least 85 mole percent of which consists of at least one bis(dihydric alcohol) ester of an aromatic dicarboxylic acid, or an oligomer thereof, the improvement comprising the employment as catalyst of a catalytic amount of a composition consisting essentially of a metallic component and an organic component, the metallic component being a metal oxide or a metal salt containing a weakly acidic anion, said metal is selected from the group consisting of zinc, manganese, aluminum, lanthanum, cobalt, calcium and cadmium, and the organic component being a simple or polymeric compound of the structure



where X^1 is —R or —OR, X^2 is —R, X^3 is —H or —R, Z is an atom of a Group Vb element of the Periodic Table having an atomic number greater than 7, and each R,

which may be the same or different, is a monovalent hydrocarbon group, wherein the molecular weight of at least one of the groups R attached directly to the atom Z is greater than 145.

3,847,874

POLYURETHANE COMPOSITION BASED ON EPOXIDE-MODIFIED LINEAR POLYESTER

Yoichi Murakami and Hikaru Watanabe, Amagasaki, Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

No Drawing. Filed Nov. 14, 1972, Ser. No. 306,284
Claims priority, application Japan, Jan. 22, 1970, 45/5,436
Int. Cl. C08g *22/10*
U.S. Cl. 260—77.5 AN **4 Claims**

1. A resin composition consisting essentially of the reaction product of

A. a polyisocyanate, present in from 1 to 40 parts by weight, with

B. a polyfunctional linear polyester having an average molecular weight of at least about 6,000, and present in from 99 to 60 parts by weight, said polyester consisting essentially of the ring-opening esterification reaction product at not over 200° C. of

(1) a linear polyester consisting essentially of the reaction product of

(a) a saturated aliphatic or aromatic dicarboxylic acid or the C_{1-4} alkyl esters thereof, with

(b) a saturated aliphatic or alicyclic dihydric alcohol,

said linear polyester having an average molecular weight of from about 1,000 to about 8,000 and a ratio of terminal carboxyl groups to terminal hydroxyl groups of at least 1, with

(2) a diepoxide, the ratio of epoxy groups to terminal carboxyl groups being from 0.5 to 2.

3,847,875

POLYAMIDES FROM HEPTADECANE DICARBOXYLIC ACID AND HETEROCYCLIC POLYAMINE

Manfred Drawert, Werne, and Eugen Griebsch, Unna, Germany, assignors to Schering AG, Berlin and Bergkamen, Germany

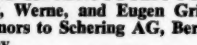
No Drawing. Filed Sept. 20, 1972, Ser. No. 290,438
Claims priority, application Germany, Sept. 28, 1971, P 21 48 264.4
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **3 Claims**

1. A polyamide resin consisting essentially of the polymeric condensation product of substantially equivalent amounts of

(1) an aliphatic dicarboxylic acid component consisting essentially of

(a) an isomeric mixture of 1,8- and 1,9-heptadecane dicarboxylic acids and

(b) mixtures of (a) with a codicarboxylic acid of the formula



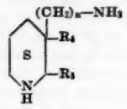
wherein R′ is a divalent aliphatic group having 1 to 12 carbon atoms, R_1 is hydrogen or an aliphatic hydrocarbon group having up to 8 carbon atoms, and *m* is 0 or 1, said codicarboxylic acid being present in said mixtures in an amount up to 9 equivalent parts per equivalent part of heptadecane dicarboxylic acid, and

(2) a diamine or polyamine component consisting essentially of

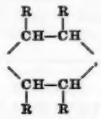
(a) at least one heterocyclic diamine or polyamine selected from the group consisting of

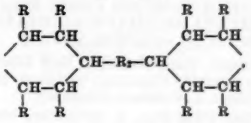
(i) amines of the formula X—N=A=NH and

(ii) amines of the formula

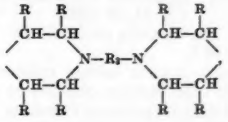


wherein A is





or



X is hydrogen or —R″NH_2 and R″ is alkylene having 1 to 6 carbon atoms; R_2 is alkylene having 1 to 8 carbon atoms; R_3 is alkylene having 2 to 12 carbon atoms; R is hydrogen or alkyl having 1 to 4 carbon atoms; R_4 is hydrogen or alkyl having 1 to 4 carbon atoms; R_5 is hydrogen or methyl; and *n* is 1 or 3; and

(b) mixtures of (a) with an aliphatic codiamine of the formula H_2—N—R_6—NH_2, wherein R_6 is an aliphatic hydrocarbon group having 2 to 20 carbon atoms, said codiamine being present in an amount up to 9 equivalent parts per equivalent part of heterocyclic diamine or polyamine.

3,847,876

PREPARATION OF POLYAMIDES BY POLYMERIZATION OF A DINITRILE, A DIAMINE AND WATER IN THE PRESENCE OF CONTROLLED AMOUNTS OF AMMONIA

Olav T. Onsager, Waldwick, N.J., assignor to Halcon International Inc., New York, N.Y.

Filed July 6, 1972, Ser. No. 269,339
Int. Cl. C08g *20/20*
U.S. Cl. 260—78 R **32 Claims**

1. A process for producing a saturated aliphatic polycarbonamide which comprises the steps of:

(a) forming an aqueous mixture of a saturated aliphatic diamine and a saturated aliphatic dinitrile in substantially equimolar ratio, the mixture containing 20 to 95% by weight of water based upon the total of diamine, dinitrile and water,

(b) heating the mixture in a first stage in a substantially closed reaction zone at autogenous or higher pressure up to about 2000 p.s.i.g. and at a temperature of 200 to 260° C., until at least 80% of the dinitrile has reacted, said reaction zone having an average content of ammonia of at least 1% by weight in the liquid phase contained in said zone,

(c) heating the mixture in a second stage while reducing said pressure to a lower pressure than the pressure

prevailing in step (b), but said lower pressure being sufficient to maintain an average content of ammonia in the second stage reaction zone of at least 0.1% by weight in the liquid phase, and being not less than about atmospheric pressure, said heating in the second stage being continued until at least 90% of the dinitrile has reacted, and

(d) heating the reaction mixture from step (c) at a substantially constant temperature within the range of 260 to 300° C. and at substantially atmospheric pressure or below while venting in order to eliminate residual water and ammonia, said heating in step (d) being sufficient to provide a polyamide having an intrinsic viscosity suitable for fiber formation.

3,847,877

TRANSPARENT, THERMOPLASTICALLY FORMABLE COPOLYAMIDES FROM BIS(4 - AMINO CYCLOHEXYL)METHANE-AROMATIC DICARBOXYLIC ACID ε-CAPROLACTAM

Werner Nielinger, Hans Rudolph, Rolf Dhein, and Kurt Schneider, Krefeld, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,371

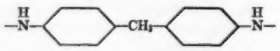
Claims priority, application Germany, Dec. 2, 1971, P 21 59 803.8

Int. Cl. C08g 20/12, 20/20

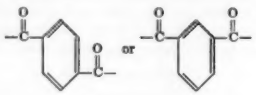
U.S. Cl. 260—78 L 10 Claims

1. Transparent, organic solvent resistant thermoplastically formable copolyamides, obtained by polycondensation of bis-(4-amino cyclohexyl)-methane, at least one aromatic dicarboxylic acid and ε-caprolactam, with a relative solution viscosity of at least 1:5 as measured in a 1% m-cresol solution at 25° C. consisting of:

(1) from 70 to 35% by weight of equimolar quantities of amino units (a) of the general formula

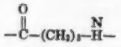


and of aromatic dicarboxylic acid units (b) of the general formula



and

(2) from 30 to 65% by weight of lactam units (c) of the general formula



3,847,878

PROCESS FOR PREPARATION OF POLYAMIDE-IMIDES AND SHAPED ARTICLES OF SAME

Robert B. Hanson, Kendall, and James R. Stephens, Naperville, Ill., assignors to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Apr. 9, 1973, Ser. No. 348,868

Int. Cl. C08g 20/32

U.S. Cl. 260—78 TF 12 Claims

1. A process for preparing high molecular weight polyamide-imide polymers having film-forming properties which process comprises first condensing trimellitic anhydride and a primary diamine in a mole ratio of about 1 to 0.55 to about 1 to 0.95 at a temperature of about 210° C. to about 250° C. to give a low molecular weight prepolymer having the carboxylic acid anhydride groups reacted with the diamine and a portion of the carboxylic acid groups reacted with the diamine leaving the remaining carboxylic acid groups unreacted [an excess of trimellitic anhydride moieties] and second further condensing this prepolymer with about 0.45 to about 0.75 moles to about 0.05 to about 0.35 moles of a diisocyanate for each mole of trimellitic anhydride in an inert solvent at a temperature of about 25° C. to about 150° C.

3,847,879

N-(THIO)DIAMIDES

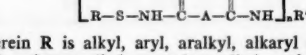
Kamel Boustany and John P. Vander Kooi, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Original application July 30, 1970, Ser. No. 59,719. Divided and this application Nov. 2, 1972, Ser. No. 303,131

Int. Cl. C08c 11/54; C08d 9/00; C08f 27/06

U.S. Cl. 260—79.5 B 10 Claims

1. A process for inhibiting premature vulcanization of a vulcanizable diene rubber containing sulfur or sulfur vulcanizing agent which comprises incorporating therein in an amount effective to inhibit premature vulcanization a compound of the formula



wherein R is alkyl, aryl, aralkyl, alkaryl or cycloalkyl; R′ is primary alkyl, secondary alkyl, cycloalkyl, aralkyl or alkenyl when n is one and alkylene when n is two; A is alkylene, alkenylene or arylene.

3,847,880

METHOD FOR VULCANIZING RUBBER WITH BIS-SULFENAMIDE ACCELERATORS

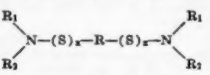
Chester D. Trivette, Jr., and John P. Vander Kooi, Akron, Ohio, assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Jan. 29, 1973, Ser. No. 327,469

Int. Cl. C08c 11/54; C08f 27/06

U.S. Cl. 260—79.5 B 7 Claims

1. The process of accelerating the vulcanization of sulfur-vulcanizable diene rubber which comprises heating said rubber and sulfur vulcanizing agent with an accelerating amount of a compound of the formula



in which R_1 and R_2 independently are alkyl of 1–8 carbon atoms, aralkyl of 7–10 carbon atoms, cycloalkyl of 5–8 carbon atoms or R_1 and R_2 together with the nitrogen atom form a heterocycle of 4–8 carbon atoms, x is one or two, R contains 1–24 carbon atoms and is alkylene, arylene, cycloalkylene, or T–T′ where T and T′ are different radicals selected from the group consisting of alkylene, arylene, and cycloalkylene.

3,847,881

STRESS-CRACK RESISTANT ETHYLENE-PERHALOETHYLENE COPOLYMERS

Max M. Mueller, Morristown, and Swayambu Chandrasekaran, East Orange, N.J., assignors to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Apr. 30, 1973, Ser. No. 355,828

Int. Cl. C08f 15/40

U.S. Cl. 260—80.77 8 Claims

1. Solid copolymers of from about 40 to 60 mol percent of ethylene, from about 40 to 60 mol percent of halogenated comonomer selected from the group consisting of tetrafluoroethylene, chlorotrifluoroethylene and mixtures thereof and from 0.1 to 10 mol percent, based on the mols of halogenated comonomer, of 3,3,3-trifluoro-2-trifluoromethyl propene.

3,847,882

HYDROXY-TERMINATED COPOLYMERS OF BUTADIENE AND ACRYLATES

Mart G. Baldwin, Newtown, Pa., and Samuel F. Reed, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application Nov. 25, 1969, Ser. No. 886,605. Divided and this application Aug. 19, 1971, Ser. No. 173,282

Int. Cl. C08f *15/02*

U.S. Cl. 260—83.5 **2 Claims**

1. The hydroxy-terminated copolymers of butadiene and ferrocenyl methyl acrylate prepared by reacting ferrocenyl methyl acrylate and a suitable polymerization initiator in an inert organic solvent with butadiene at a reaction temperature and for a reaction time period sufficient for said reaction to take place after which solvent removal is effected and said copolymers are dried at a suitable drying temperature while under reduced pressure; said initiator being selected from azo-bis-(2-methyl - 5 - hydroxyvaleronitrile), azo-bis-(2 - methyl - 3 - hydroxypropionitrile), and azo-bis(hydroxyethyl - 2 - methyl propionate); said inert organic solvent being selected from toluene, dioxane, and dimethyl formamide; said reaction temperature being in the range of about 60° C. to about 80° C.; said reaction time being from about 24 hours to about 120 hours; said drying is accomplished at a suitable temperature in the range of about 70° C. to about 75° C. and said reduced pressure is in the range of about 1 millimeter; said copolymers being characterized by a molecular weight in the range from about 1000 to about 10,000, hydroxy-end group content of about 0.1 weight percent to about 2.5 weight percent, and an iron content of about 0.74 percent weight percent to about 12.0 weight percent.

3,847,883

METHOD OF PREPARING POLYMERS UTILIZING AS CATALYSTS HYDROCARBON-SOLUBLE COMPLEXES OF AN ORGANOMAGNESIUM COMPOUND WITH A GROUP I ORGANOMETALLIC COMPOUND

Conrad W. Kamienski, Gastonia, N.C., and Jerome F. Eastham, Memphis, Tenn., assignors to Gulf Resources & Chemical Corporation, Houston, Tex.

No Drawing. Original application July 23, 1970, Ser. No. 57,820, now Patent No. 3,742,077. Divided and this application Aug. 30, 1972, Ser. No. 285,067

Int. Cl. C08f *1/28, 1/32, 19/08*

U.S. Cl. 260—83.7 **12 Claims**

1. In a method of preparing polymers, by polymerizing at least one conjugated diene monomer, the improvement which consists in the utilization, as the catalyst, in a hydrocarbon solvent solution, of a complex of (i) at least one organomagnesium compound with (ii) at least one organometallic compound in which the metal is a Group I metal, the organo radicals of said (i) and (ii) compounds being C_2–C_{14} hydrocarbon radicals selected from the group of alkyl, cycloalkyl, aryl, alkylaryl, cycloalkylaryl, heterocyclic, ethylenically unsaturated organo radicals, alkylene and polyenes.

3,847,884

ACRYLONITRILE (CO)POLYMERS CONTAINING ANTISTATIC AGENTS

Edward Radlmann and Gunther Nischk, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

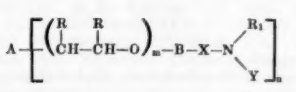
No Drawing. Filed Apr. 20, 1973, Ser. No. 353,019

Claims priority, application Germany, Apr. 21, 1972, P 22 19 532.0

Int. Cl. C08f *3/76, 15/02, 15/22*

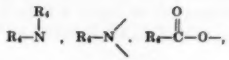
U.S. Cl. 260—85.5 R **6 Claims**

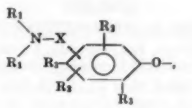
1. Composition comprising acrylonitrile homopolymer or copolymer, and as antistatic additive 1–20% by weight, based on the total quantity of the composition a compound of the formula

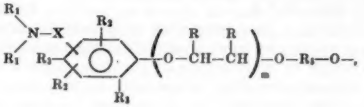


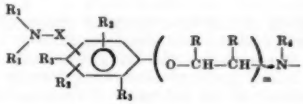
in which

m is an integer of from 1–150;
n is 1 or 2;
A is R_4—O—,

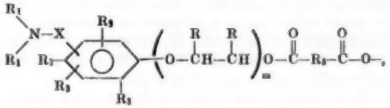




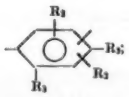




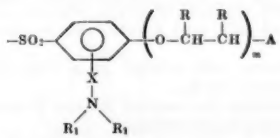
or



B is an alkylene radical with 1 or 2 carbon atoms or an arylene radical of the formula



R is hydrogen or methyl;
R_1 is a straight or branched chain alkyl radical containing 1–20 carbon atoms or an aryl radical;
R_2 is hydrogen, alkyl containing 1–6 carbon atoms, fluorine, chlorine, bromine or iodine;
R_3 is hydrogen, NH_2, NO_2, CN, CF_3, Cl or



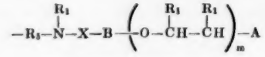
R_4 is alkyl radical containing 1–30 carbon atoms, an aryl, alkyl-aryl or arylalkyl radical;

R_5 is a straight or branched chain alkylene radical containing 1–30 carbon atoms;

X is

or —SO_2—; and

Y is a straight or branched chain alkyl radical containing 1 to 20 carbon atoms or an aryl radical; or where $n=1$, a radical of the formula



3,847,885

DEWATERING ACRYLONITRILE POLYMERS

James Bruce Peeso, Jr., Norwalk, Conn., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed May 21, 1973, Ser. No. 362,121

Int. Cl. C08f 3/76, 15/02, 15/22

U.S. Cl. 260—85.5 R 5 Claims

1. A process for dewatering acrylonitrile polymer crumb containing at least about 50% combined acrylonitrile produced by polymerizing acrylonitrile, alone or with other monoethylenically unsaturated comonomers copolymerizable therewith, in an aqueous medium comprising:

(a) heating an aqueous slurry of said acrylonitrile polymer crumb, said slurry containing sufficient water to ensure that said slurry remains easily flowable, to a temperature above the minimum melting temperature of said polymer in the presence of water but not more than about 20° C. above said minimum melting temperature for a time sufficient for melting to occur while under a pressure at least equal to the vapor pressure of water at the slurry temperature and while agitating said slurry sufficiently to prevent substantial coalescence of said polymer;

(b) then cooling said slurry to below said minimum melting temperature while continuing to agitate said slurry sufficiently to prevent substantial coalescence of said polymer particles; and

(c) thereafter separating the resultant polymer particles from the excess liquid of the slurry.

3,847,886

METHOD OF PREPARING SMALL PARTICLES OF A SOLID POLYMER

Harry W. Blunt, Hockessin, Del., assignor to Hercules Incorporated, Wilmington, Del.

No Drawing. Continuation-in-part of application Ser. No. 254,294, May 17, 1972. This application Feb. 21, 1973, Ser. No. 334,344

Int. Cl. C08f 3/30, 3/56, 3/68

U.S. Cl. 260—89.1 5 Claims

1. A method of preparing spherical small particles of a normally solid, water-insoluble vinyl polymer selected from the class consisting of acrylic polymers, poly(vinyl chloride) and poly(vinyl acetate), which process comprises:

(a) dissolving said polymer in a water-immiscible, polar organic solvent;

(b) emulsifying the resultant solution in water, forming an oil-in-water emulsion;

(c) adding to said oil-in-water emulsion a water-immiscible organic liquid which is miscible with the organic solvent but which is a nonsolvent for the polymer; and

(d) recovering polymer particles from the resultant mixture of liquids.

3,847,887

PROCESS FOR PREPARING HYDROXY DERIVATIVES OF FLUORINATED POLYMERS

William R. Siegart, Poughkeepsie, N.Y., William D. Blackley, Lake Elmo, Minn., and Harry Chafetz, Poughkeepsie, N.Y., assignors to Texaco Inc., New York, N.Y.

No Drawing. Original application June 21, 1972, Ser. No. 265,030. Divided and this application July 9, 1973, Ser. No. 377,475

Int. Cl. C08f 7/04, 27/02, 27/00

U.S. Cl. 260—93.5 A 4 Claims

1. A method for preparing an organic hydroxy compound derivative of a fluorinated polymer which comprises reacting at 50 to 200° C. a fluorinated polymer from the group consisting of

(1) a fluorinated polystyrene having the empirical formula $(C_{16}H_3F_{25})_x$ in which x has a value from 3 to 5, and

(2) a fluorinated polypropylene having the empirical formula $(C_3HF_5)_x$ in which x has a value from 20 to 40, with a compound having the formula ROH in which R is a hydrocarbyl radical having from 2 to 30 carbon atoms, in the presence of a catalyst selected from the group consisting of:

(1) a tertiary amine having the formula R_3N in which R is an aliphatic radical having from 1 to 30 carbon atoms, and,

(2) an alkali metal salt having the formula ROM in which M represents an alkali metal and R has the value noted above, said reaction being conducted using about one moiety of said organic hydroxy compound and two moieties of said tertiary amine or alkali metal salt catalyst for each hydrogen atom in said fluorinated polymer.

3,847,888

ULTRA-HIGH MOLECULAR WEIGHT POLYETHYLENE MOLDING POWDER AND MOLDING PROCESS

Eugene R. Baumgaertner, Florham Park, N.J., assignor to Allied Chemical Corporation, New York, N.Y.

No Drawing. Filed Dec. 1, 1972, Ser. No. 311,062

Int. Cl. C08f 29/04, 47/02

U.S. Cl. 260—94.9 GD 8 Claims

1. Molding powder of ultra-high molecular weight linear polyethylene, having molecular weight of at least 1×10^6 and density of 0.92 to 0.99, free-sinterable above its crystalline melting point after molding under pressure of at least 2,000 p.s.i. to form a solid article having tensile strength of at least 4,000 p.s.i. and elongation of at least 200 percent, comprising particles of less than 100 micron mean particle size having distribution function of less than 0.80.

3,847,889

PROTEIN SEPARATION BY INSOLUBLE, AMPHOTERIC ION EXCHANGERS

Linda Fryklund and Jerker Olof Porath, Uppsala, Sweden, assignors to Exploaterings Aktiebolaget T.B.F., Uppsala, Sweden

Continuation of application Ser. No. 96,735, Dec. 10, 1970. This application Mar. 30, 1973, Ser. No. 346,619

Claims priority, application Sweden, Dec. 22, 1969, 17,721/69

Int. Cl. C07g 7/00

U.S. Cl. 260—112 R 5 Claims

1. A dipole-ion-exchange chromatographic method of separating different types of proteins and peptides from

each other comprising passing a solution of polyelectrolytes selected from the group consisting of proteins and peptides, through a bed of an amphoteric adsorbent, said adsorbent comprising an insoluble, organic hydroxyl-containing, hydrophilic polymer containing both basic, nitrogen-containing groups and carboxylate groups in the same molecule, where the proportion between the basic and the acid groups is simple and stoichiometric, said polymer being the reaction product of an amino acid or an amino acid derivative and an insoluble organic hydroxyl-containing hydrophilic carbohydrate polymer, whereby said polyelectrolytes will migrate at different speeds depending on the strength of the reciprocal interaction between the polyelectrolyte and the substituents in said adsorbent, and are selectively adsorbed by said adsorbent.

3,847,890

ACIDIC MONOSACCHARIDE-SUBSTITUTED PROTEINS

Allan M. Green, P.O. Box 18038, Cleveland Heights, Ohio 44118 and Jack Pensky, 7560 Chagrin Road Falls, Chagrin Falls, Ohio 44022

No Drawing. Filed Nov. 1, 1971, Ser. No. 194,541
Int. Cl. A61k *17/02;* **C07c** *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.5 **1 Claim**

1. An acidic monosaccharide-substituted protein selected from the group consisting of N-acetylneuraminyl insulin (bovine), N-acetylneuraminyl insulin (porcine), N-acetylneuraminyl human serum albumin, N-acetylneuraminyl bovine serum albumin, N-acetylneuraminyl human growth hormone, gluconyl insulin (bovine); gluconyl insulin (porcine), gluconyl human serum albumin, and gluconyl human growth hormone wherein the substitution occurs at an available α-amino or ε-amino group.

3,847,891

SEPARATION OF SECRETIN AND CHOLECYSTOKININ-PANCREOZYMIN FROM MIXTURE THEREOF

Shinro Tachibana, Narashino, Japan, assignor to Eisai Co., Ltd., Tokyo, Japan

Filed Apr. 18, 1973, Ser. No. 352,240
Int. Cl. A61k *27/00;* **C07c** *103/52*
U.S. Cl. 260—112.5 **16 Claims**

1. A process for the separation of secretin and cholecystokinin-pancreozymin from a mixture thereof, comprising

(a) contacting the mixture in aqueous solution at a pH ranging from about 9 to about 12, with an anion-exchange resin to cause selective adsorption of cholecystokinin-pancreozymin on said resin and reserving the remaining aqueous solution;

(b) eluting the cholecystokinin-pancreozymin from said resin by contacting it with an aqueous eluting medium at pH lower than 9: and

(c) recovering the cholecystokinin-pancreozymin from the eluate of step (b) and recovering the secretin from the aqueous solution obtained from step (a), which solution contains the secretion not adsorbed by said resin.

3,847,892

OCTAPEPTIDE SOLID PHASE-FRAGMENT PROCESS AND PENTAPEPTIDE INTERMEDIATES

Su-San Wang, Bloomfield, N.J., assignor to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed June 29, 1973, Ser. No. 375,199
Int. Cl. C07c *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.5 **6 Claims**

1. Benzyloxycarbonyl - glycyl-L-phenylalanyl-L-phenylalanyl-O-benzyl-L-tyrosyl-O-benzyl-L-threonine.

3,847,893

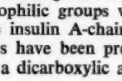
PROCESS FOR THE PREPARATION OF INSULIN DERIVATIVES CROSS-LINKED BY A DICARBOXYLIC ACID GROUP AT THE AMINO A–1 GLYCINE AND AMINO B–29 LYSINE

Dietrich Brandenburg, Schmithof, uber Aachen, and Walter Puls, Wuppertal, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

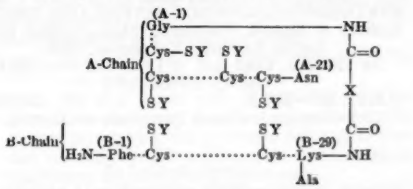
Filed Feb. 16, 1973, Ser. No. 333,366
Claims priority, application Germany, Mar. 1, 1972, P 22 09 836.8
Int. Cl. A61k *17/04;* **C07c** *103/52;* **C07g** *7/00*
U.S. Cl. 260—112.7 **9 Claims**

1. A process for the preparation of a bifunctionally crosslinked insulin derivative in which the amino group of the A–1 glycine is linked to the ε-amino group of the B–29 lysine by a bridge of the formula:

in which X is a carbon-carbon bond, alkylene of 1 to 15 carbon atoms, or alkylene of 1 to 15 carbon atoms wherein 1 carbon atom is replaced by sulphur, oxygen or imino, said alkylene being unsubstituted or substituted by one or two hydrophilic groups which comprises the steps of reacting the insulin A-chain in which the four free mercapto groups have been protected, with an activated derivative of a dicarboxylic acid of the formula:



in which X is as above defined and Z is a suitable acid activating group, to produce an insulin A-chain derivative monofunctionally substituted on the amino group of the A–1 glycine, reacting said derivative with an insulin B-chain in which the two free mercapto groups have been protected, to yield a compound of the formula:



in which X is as above defined and Y is the mercapto protecting group, removing the mercapto protecting groups, and oxidizing the mercapto groups in an aqueous alkaline medium to form disulfide bonds.

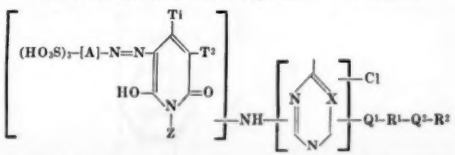
3,847,894

ARYL-AZO-PYRIDONE COMPOUNDS CONTAINING A SUBSTITUTED PYRIMIDINE OR TRIAZINE GROUP

Denis Robert Annesley Ridyard, Manchester, England, assignor to Imperial Chemical Industries Limited, London, England

No Drawing. Filed Apr. 25, 1972, Ser. No. 247,321
Claims priority, application Great Britain, Apr. 29, 1971, 12,121/71
Int. Cl. C09b *29/36*
U.S. Cl. 260—153 **3 Claims**

1. A water-soluble monoazo dyestuff of the formula



wherein A represents benzene or naphthalene; Z represents hydrogen, lower alkyl, hydroxyethyl, cyclohexyl or phenyl; T^1 represents hydrogen, hydroxyl or lower alkyl;

T^2 represents hydrogen, lower alkyl, carbamoyl or cyano; Z represents lower alkyl or phenyl; the —NH— group is directly attached to A or to Z; X represents =N—,

$$=\overset{|}{C}-Cl \text{ or } =\overset{|}{C}-CN;$$

Q^1 represents oxygen, sulphur or —NH—; Q^2 represents oxygen or a direct bond; R^1 represents ethyleen, phenylene or cyclohexylene; and R^2 represents alkyl having 2–15 carbon atoms, benzyl, phenyl or cyclohexyl, such that R^1 and R^2 together contain at least 8 carbon atoms.

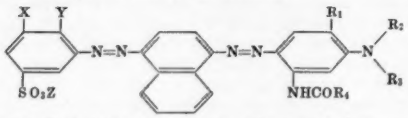
3,847,895

SUBSTITUTED SULFOPHENYL-AZO-NAPHTHYL-AZO-ANILIDE COMPOUNDS

William H. Armento, Albany, N.Y., assignor to GAF Corporation, New York, N.Y.

No Drawing. Filed Sept. 30, 1971, Ser. No. 185,342
Int. Cl. C09b *31/04*
U.S. Cl. 260—187 **10 Claims**

1. A compound having the formula:



wherein R_1 is hydrogen or lower alkoxy; R_2 is hydrogen, lower alkyl, chlorolower alkyl, bromolower alkyl, or hydroxylower alkyl; R_3 is lower alkyl, chlorolower alkyl, bromolower alkyl, or hydroxylower alkyl; R_4 is lower alkyl of 1 to 6 carbon atoms or phenyl; Z is hydrogen or an alkali metal; one of X and Y is hydrogen and the other is hydrogen, chlorine, bromine, hydroxy, cyano, lower alkyl or lower alkoxy.

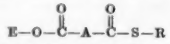
3,847,896

ERYTHROMYCIN-2-THIOL ESTERS AND PROCESS

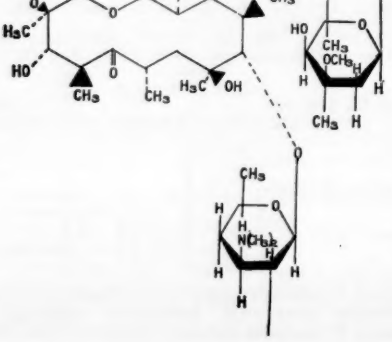
Anthony A. Sinkula, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 9 1973, Ser. No. 349,373
Int. Cl. C07c *129/18*
U.S. Cl. 260—210 E **21 Claims**

1. A compound selected from those of formula:



and the pharmaceutically acceptable acid addition salts thereof wherein A is selected from alkylene and alkenylene having in each instance from 2 to 4 carbon atoms inclusive; R is hydrocarbyl and E represents the monovalent moiety of formula:



3,847,897

MICROCRYSTALLINE CHITIN

Howard J. Dunn, Lomita, and M. Paul Farr, San Pedro, Calif., assignors to Ralston Purina Company, St. Louis, Mo.

No Drawing. Filed Sept. 7, 1971, Ser. No. 178,457
Int. Cl. C07c *95/04*
U.S. Cl. 260—211 R **10 Claims**

1. A composition of matter consisting essentially of: an aqueous, stable thixotropic dispersion of microcrystalline chitin in an amount of at least about 0.5% by weight of said dispersion, said dispersion having a pH above 4.0.

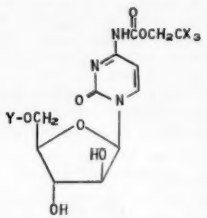
3,847,898

N^4-TRIHALOETHOXY CARBONYL ARABINOFURANOSYL CYTOSINE 5'-ESTERS

Robert C. Kelly, William J. Wechter, and Duane T. Gish, Kalamazoo, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Continuation-in-part of abandoned application Ser. No. 828,380, May 27, 1969. This application Feb. 16, 1970, Ser. No. 11,826
Int. Cl. C07d *51/52*
U.S. Cl. 260—211.5 R **12 Claims**

1. A compound having the following structure:



in which X is bromine or chlorine and Y is a member of the group consisting of hydrogen, trityl, and an organic carboxylic acyl radical.

3,847,899

METHOD FOR MANUFACTURE OF CITRUS BIOFLAVONOIDS

William G. Mitchell, Dade City, Fla., assignor to Lykes Pasco Packing Co., Dade City, Fla.

No Drawing. Filed Jan. 15, 1971, Ser. No. 106,924
Int. Cl. C07g *17/00*
U.S. Cl. 260—236.5 **5 Claims**

1. A method for extracting citrus bioflavonoids from citrus molasses, said method comprising:

(a) extracting said molasses with an organic solvent for flavanone glycosides;

(b) concentrating the resultant extract;

(c) precipitating the bioflavonoid constituents in said extract with a lead salt under alkaline conditions;

(d) removing the resultant precipitate by filtration;

(e) acidifying said precipitate with phosphoric acid, thereby dissolving said bioflavonoids and forming a lead phosphate complex precipitate;

(f) separating said lead phosphate complex precipitate by filtration and discarding said lead phosphate complex precipitate;

(g) removing all trace of lead from the remaining bioflavonoid-containing filtrate by adding excess soluble sulfide thereto; and

(h) concentrating the resultant lead-free bioflavonoid solution.

3,847,900

LABILE ESTERS OF α-ISOCYANOBENZYLPENICILLIN AS CHEMICAL INTERMEDIATES

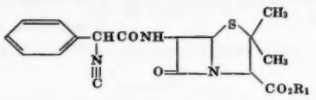
Timothy H. Cronin, Niantic, Conn., assignor to Pfizer Inc., New York, N.Y.

No Drawing. Filed Nov. 10, 1972, Ser. No. 305,593

Int. Cl. C07d 99/16

U.S. Cl. 260—239.1 9 Claims

1. A compound selected from the group of penicillins having the formula:



wherein R_1 is selected from the group consisting of 1-alkanoyloxymethyl wherein said alkanoyloxy contains from 2 to 5 carbon atoms; phenacyl; benzyl and substituted benzyl wherein said substituent is selected from the group consisting of 4-bromo, 4-nitro and 3,5-di-*t*-butyl-4-hydroxy; bis(4-methoxyphenyl)methyl; trimethylsilyl; and benzylideneimino.

3,847,901

3-ALKENYL SUBSTITUTED RIFAMYCIN SV COMPOUNDS

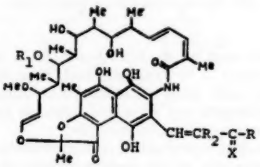
Renato Cricchio, Varese, Italy, assignor to Gruppo Lepetit S.p.A., Milan, Italy

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,732

Int. Cl. C07d 99/02, 99/04

U.S. Cl. 260—239.3 P 12 Claims

1. A 3-alkenyl rifamycin SV compound of the formula



wherein R represents hydrogen, alkyl of from 1 to 8 carbon atoms or phenyl-lower alkyl, R_1 represents hydrogen or acetyl, R_2 represents hydrogen or lower alkyl, X represents oxygen, imino, substituted imino, oximino, substituted oximino, hydrazono or substituted hydrazono, said lower alkyl groups containing from 1 to 4 carbon atoms and said substituted imino, (a), oximino, (b), and hydrazono groups, (c), having the hydrogen member substituted respectively, by (a) dimethylaminopropyl or alpha - methyl - benzyl, (b) ethyl, propyl, butyl, octyl, propenyl, propynyl, dipropylmethyl, diphenylmethyl, benzyl, phenethyl, phenylpropyl, phenoxyethyl, carboxyethyl, pyridylethyl, phenoxyethyl or geranyl, or (c) methyl, ethyl, dimethyl, diethyl, dipropyl, phenylpropyl, hydroxyethyl, di - (2 - hydroxyethyl), (diethylamino)-ethyl, benzyl, phenylpropyl, propenyl, cinnamyl, (N-methyl, - N - phenyl), (N - methyl, N - benzyl) or phenyl group and further characterized in that in the substituted hydrazono group, the substituents on the nitrogen atom also may form a heterocyclic ring of the group consisting of piperazine, 4 - methyl - 1 - piperazine, morpholine, piperidine, heptamethyleneimine, octamethyleneimine or 3,8 - diazabicyclo(3,2,1)octane; and the 16,17; 18,19; and 28,29-hexahydro derivatives of said alkenyl compounds.

3,847,902

PREPARATION OF CAPROLACTAM AND DICYCLOHEXYL KETONE

Alberto Santambrogio, Corsico, and Emilio Perrotti, San Donato Milanese, Italy, assignors to Snam Progetti S.p.A., San Donato Milanese, Italy

No Drawing. Continuation of abandoned application Ser. No. 159,539, July 2, 1971. This application Jan. 10, 1973, Ser. No. 322,481

Claims priority, application Italy, July 2, 1970, 26,875/70

Int. Cl. C07d 41/06

U.S. Cl. 260—239.3 A 3 Claims

1. The method of preparing, as end products, caprolactam and dicyclohexyl ketone wherein an alkali metal salt of ε-cyclohexyl amidocaproic acid is pyrolyzed by heating to a temperature in the range of 300–500° C. and a distillate containing said end products is recovered.

3,847,903

METHOD FOR EXTRACTING AND ISOLATING RIFAMYCIN O FROM FERMENTATION BROTHS OF RIFAMYCINS

Carlo Turolla, Milan, Giovanni Bonfanti, Sesto San Giovanni, and Carmine Pasqualucci, Milan, Italy, assignors to Archifar Industrie Chimiche del Trentino S.p.A., Trento, Italy

No Drawing. Filed Mar. 1, 1973, Ser. No. 337,119

Int. Cl. C07d 41/00

U.S. Cl. 260—239.3 P 4 Claims

1. A method for extracting and isolating Rifamycin O from a fermentation broth of rifamycin containing Rifamycin B comprising:

filtering said broth to obtain a clear liquid;

bringing said clear liquid to a temperature within 15–25° C., and to a pH within 4.0–7.5;

treating said clear liquid with an oxidizing agent selected from the group consisting of sodium nitrite, sodium persulphate, and hydrogen peroxide to convert said Rifamycin B to Rifamycin O, a precipitate insoluble in the treated clear liquid; and

separating said precipitated Rifamycin O from the treated clear liquid.

3,847,904

METHOD OF PREPARING 5,6-DIHYDRO-11-MORPHANTHRIDONES

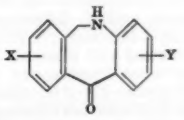
Alexander E. Drukker, Milwaukee, and Claude I. Judd, Mequon, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Oct. 5, 1972, Ser. No. 295,130

Int. Cl. C07d 41/08

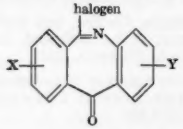
U.S. Cl. 260—239 D 4 Claims

1. The method of preparing compounds of the formula



wherein X and Y are selected from hydrogen, lower alkyl of 1 to 4 carbon atoms, lower alkoxy of 1 to 4 carbon

atoms, halo, trifluoromethyl, amino or sulfonylamido, which comprises dissolving a compound of the formula



in which X and Y are as defined, in an unreactive solvent selected from an ether or ester and reacting said compound with hydrogen under a pressure of about 60 lbs. p.s.i. at about 25° C. in the presence of a hydrogen halide receptor and a catalyst selected from Raney nickel or palladium-on-carbon.

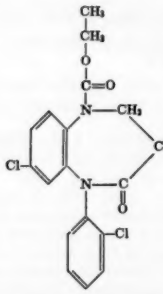
3,847,905

1,5-BENZODIAZEPINE DERIVATIVES

Oskar Bub, Ludwigshafen, Ludwig Friedrich, Mannheim, Hans-Peter Hofmann, Ludwigshafen, Horst Kreiskott, Wachenheim, and Frank Zimmermann, Mannheim, Germany, assignors to Knoll A.G. Chemische Fabriken, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 29, 1971, Ser. No. 193,972
Claims priority, application Germany, Oct. 28, 1970, P 20 52 840.9, P 20 52 841.0; July 2, 1971, P 21 33 065.4
Int. Cl. C07d *53/04*
U.S. Cl. 260—239.3 B **6 Claims**

1.



3,847,906

PROCESS FOR THE MANUFACTURE OF β-(3-OXO-7α-ACETYLTHIO-17β-HYDROXY-4-ANDROSTEN-17α-YL)-PROPIONIC ACID γ-LACTONE

Kurt Radscheit, Kelkheim, Taunus, Ulrich Stache, Hofheim, Taunus, and Richard Brodersen, Frankfurt am Main, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Oct. 3, 1973, Ser. No. 403,040
Claims priority, application Germany, Oct. 5, 1972, P 22 48 834.2
Int. Cl. C07c *173/00*
U.S. Cl. 260—239.55 C **4 Claims**

1. A process for the manufacture of β-(3-oxo-7α-acetylthio-17β-hydroxy-4-androsten-17α-yl)-propionic acid γ-lactone, which comprises oxidizing β-(3β,17β-dihydroxy-5-androsten-17α-yl)-propionaldehyde ethylene acetal according to the Oppenauer method, dehydrogenating the β-(3-oxo - 17β - hydroxy-4-androsten-17α-yl)-propionaldehyde ethylene acetal obtained with chloranil in methanol with simultaneous cyclization, reacting the β-(3-oxo-17β-hydroxy - 4,6 - androstadien-17α-yl)-propionaldehyde cyclohemiacetal methyl glycoside thus obtained with thio-acetic acid and oxidizing the 3-(3′-oxo-7′α-thio-acetyl-17′β-hydroxy-4′-androsten-17′α-yl) - propionaldehyde cyclohemiacetal 1-thioacetate with chromic acid to yield the corresponding γ-lactone.

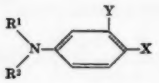
3,847,907

NOVEL N-(OXIDOALKYL) ANILINES

Ladislav Dolejs, Letohradska 56, 7; Zuzana Machkova, Mezibranska 7, 1; Pavel Beran, Nar. obrany 7, 6; Jitka Kahovcova, ul. P. Rezka 3, 4; Karel Slama, 674 Na cervenem vrchu, 6; and Frantisek Sorm, 9 Korejska, 6, all of Prague, Czechoslovakia

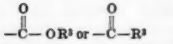
No Drawing. Filed Apr. 15, 1971, Ser. No. 134,460
Claims priority, application Czechoslovakia, May 5, 1970, 3,123/70
Int. Cl. C07d *1/00*
U.S. Cl. 260—240 H **16 Claims**

1. A compound selected from those of the following formula I:



wherein,

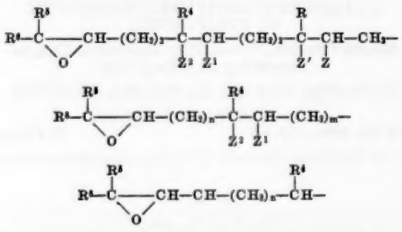
X is



in which R^3 is hydrogen, lower alkyl, benzyl, phenethyl, methylbenzyl, naphthylmethyl, phenyl, naphthyl or methylphenyl,

Y is hydrogen, or together with X, forms the methylenedioxy bridge;

R^1 is one of the groups A, B or C:



in which each of R, R^4, R^5 and R^6 is hydrogen or lower alkyl; Z is hydrogen and Z′ is hydrogen, or together with Z, a carbon-carbon bond or oxido; Z^1 is hydrogen and Z^2 is hydrogen, or together with Z^1, a carbon-carbon bond oxido;

R^2 is hydrogen, lower alkyl, or a carboxylic acyl group containing one to six carbon atoms, or one of the groups A, B or C;

m is the positive integer one or two; and

n is the positive integer two or three.

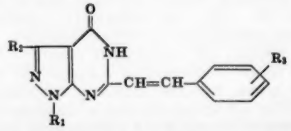
3,847,908

6-STYRYLPYRAZOLO[3,4-d]PYRIMIDINONES AND PYRIMIDINES

Hermann Breuer and Uwe D. Treuner, Regensburg, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 5, 1973, Ser. No. 337,807
Int. Cl. C09d *23/14*
U.S. Cl. 260—240 D **13 Claims**

1. A compound of the formula



wherein R_1 is lower alkyl, cyclo-lower alkyl or phenyl-lower alkyl; R_2 is hydrogen or lower alkyl and R_3 is hydrogen, lower alkyl, halogen or trifluoromethyl.

3,847,909

WATER-INSOLUBLE AZLACTONE DYESTUFFS AND PROCESS FOR PREPARING THEM

Rudolf Schickfluss, Frankfurt am Main, and Willi Steckelberg, Hofheim Taunus, Germany, assignors to Farbwerk Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

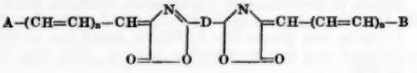
No Drawing. Filed May 24, 1973, Ser. No. 363,416

Claims priority, application Germany, May 26, 1972, P 22 25 546.5

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 F 7 Claims

1. Water insoluble azlactone dyestuffs of the formula



wherein A and B each represent phenyl, lower alkylphenylene, lower alkoxy-phenylene, chlorophenylene, bromophenylene, methylenedioxy- phenylene or naphthyl, D represents phenylene, chlorophenylene, bromophenylene, biphenylene or naphthylene, and *n* represents 0 or 1.

3,847,910

FUSED-s-TRIAZINE-DIONES

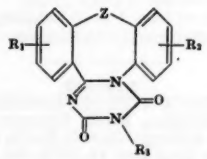
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,613

Int. Cl. C07d *57/34*

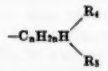
U.S. Cl. 260—248 NS 6 Claims

1. A compound of the formula



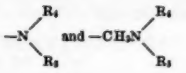
I

wherein R_1 and R_2 are selected from the group consisting of hydrogen, bromine, chlorine, fluorine, lower alkyl of 1 through 3 carbon atoms, lower alkoxy of 1 through 3 carbon atoms, lower alkylthio of 1 through 3 carbon atoms, lower alkylsulfonyl of 1 through 3 carbon atoms, lower dialkylamino having lower alkyl moieties of 1 through 3 carbon atoms, lower alkanoylamido having lower alkanoyl moieties of 1 through 3 carbon atoms, trifluoromethyl, cyano and nitro; R_3 is selected from the group consisting of hydrogen, lower alkyl of 1 through 3 carbon atoms, lower alkenyl of 3 through 4 carbon atoms, $—C_n—H_{2n}—O—$ lower alkyl wherein *n* is 2 through 6 and lower alkyl is of 1 through 3 carbon atoms, carboalkoxy having a lower alkyl moiety of 1 through 3 carbon atoms and



wherein *n* has the same meaning as above and R_4 and R_5 have the same meaning as R_3, above, except carboalkoxy, and R_4 and R_5 when taken together with —N< is a saturated heterocyclic amino radical selected from the group consisting of pyrrolidino, piperidino, hexamethylenimino, morpholino, thiomorpholino, piperazino, 4-lower alkylpiperazino wherein lower alkyl is of 1 through 3 carbon atoms and their counterparts having lower alkyl substituent(s) of 1 through 3 carbon atoms; Z is selected from the group consisting of O, S,

and >N—R_9 wherein R_7, R_8 and R_9 have the same meaning as R_3, above, except carboalkoxy, and R_7 in addition includes



wherein R_4 and R_5 have the same meaning as above; and a pharmacologically acceptable acid addition salt thereof.

3,847,911

NOVEL SUBSTITUTED (NITROFURYLACRYLIDENE) HYDRAZINES WITH ANTIBACTERIAL PROPERTIES

Etienne Szarvasi, Charbonnieres-les-Bains, and Louis Fontaine, Lyon, France, assignors to Li[illegible], Lyonnaise Industrielle Pharmaceutique, Lyon, France

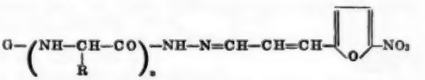
No Drawing. Filed Jan. 5, 1972, Ser. No. 215,677

Claims priority, application France, Jan. 7, 1971, 7100283

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 A 14 Claims

1. A substituted (nitrofuryl acrylidene) hydrazine represented by the formula:



in which *n*=1 or 0; G is a member of the group consisting of thenoyl, nitrothenoyl and carbobenzoxy radicals; and R, when *n*=1 is a member of the group consisting of hydrogen and methyl, butyl, isobutyl, δ-(2-furoyl)aminobutyl, benzyl, hydroxymethyl and p-hydroxybenzyl radicals.

3,847,912

NOVEL - 5 - NITROFURFURALDEHYDE DERIVATIVES AND PROCESS FOR THEIR PREPARATION AND PHARMACEUTICAL COMPOSITIONS CONTAINING SAME

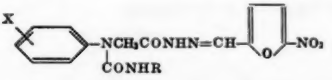
Shankar Somasekhara and Dinesh Maganlal Desai, Wadi Wadi, Baroda, India, assignors to Karamchand Premchand Private Limited, Ahmedabad, Gujarat State, India

No Drawing. Filed Jan. 12, 1973, Ser. No. 323,025

Int. Cl. C09b *23/00*

U.S. Cl. 260—240 A 9 Claims

1. Novel 5-Nitrofurfuraldehyde derivatives of the general formula I



I

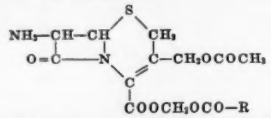
wherein X is hydrogen, methyl or methoxy and R is amino or 5-nitrofurfuralimino group.

3,847,913
CEPHALOSPORANIC ACID ESTERS

Wagn Ole Gudtfredsen, Vaerlose, Denmark, assignor to Lovens Kemiske Fabrik Produktionsaktieselskab, Ballerup, Denmark

No Drawing. Original application Jan. 28, 1969, Ser. No. 794,751, now Patent No. 3,655,658. Divided and this application Dec. 9, 1971, Ser. No. 206,565
Claims priority, application Great Britain, Jan. 30, 1968, 4,821/68
Int. Cl. C07d *99/24*
U.S. Cl. 260—243 C 2 Claims

1. A compound of the formula:



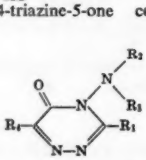
or a hydrochloride thereof wherein R is a lower alkyl radical.

3,847,914
4-AMINO-1,2,4-TRIAZINE-5-ONE, AND A PROCESS FOR THEIR PRODUCTION

Karlfried Dickore, Leverkusen, Wilfried Draber, Wuppertal-Elberfeld, and Ludwig Eue, Cologne, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Feb. 9, 1972, Ser. No. 224,966
Claims priority, application Germany, Feb. 18, 1971, P 21 07 757.6
Int. Cl. C07d *55/10*
U.S. Cl. 260—248 AS 30 Claims

1. 4-Amino-1,2,4-triazine-5-one compound of the formula:



in which

R_1 and R_4, which may be the same or different, are hydrogen, alkyl of from 1 to 6 carbon atoms, trifluoromethyl, cycloalkyl of from 3 to 12 ring carbon atoms, phenyl, halophenyl, trifluoromethylphenyl, nitrophenyl, alkylthiophenyl, alkylsulfonylphenyl, cyanalkyl, alkoxyalkyl, alkylphenyl or alkoxyphenyl of from 1 to 4 carbon atoms in the alkyl or alkoxy moiety, or phenylalkyl of from 1 to 3 carbon atoms in the alkyl moiety,

R_2 is hydrogen or alkyl of from 1 to 4 carbon atoms; and

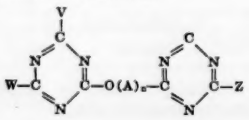
R_3 is hydrogen, alkyl from 1 to 4 carbon atoms, phenyl, haloalkyl, trifluoromethylalkyl, hydroxyalkyl, or phenylalkyl of from 1 to 3 carbon atoms in the alkyl moiety, or alkylphenyl, alkoxyphenyl or alkylmercaptophenyl of from 1 to 4 carbon atoms in the alkyl moiety.

3,847,915
BIS-TRIAZINE TEXTILE SOFTENERS

David Paul Bishop and Ronald Meredith Morris, Wirral, England, assignors to NV International Octrooimaatschappij "Octropa," Rotterdam, Netherlands

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,343
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 4 Claims

1. A compound of the formula:



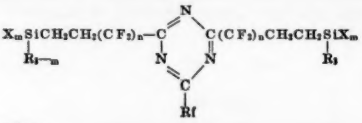
in which A represents a member selected from the group consisting of ethenoxy, propenoxy, 1,2 butenoxy and 2,3 butenoxy groups and mixtures therefore, VWYZ represent members selected from the group consisting of halogen, —OH, NRR_1 and —OR_1, providing that at least one of VWYZ is selected from the group consisting of —OR_1 and —NRR_1 groups, R represents a member selected from the group consisting of hydrogen, C_{12}–C_{30} linear alkyl and C_{12}–C_{30} branched chain alkyl groups, R_1 represents a member selected from the group consisting of C_{12}–C_{30} linear and C_{12}–C_{30} branched chain alkyl groups, n=4–35.

3,847,916
FLUOROCARBON TRIAZINE COMPOUNDS

Yung Ki Kim and Ogden R. Pierce, Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

No Drawing. Original application June 13, 1968, Ser. No. 733,833, now Patent No. 3,532,696, dated Oct. 6, 1970. Divided and this application Apr. 3, 1970, Ser. No. 25,579
Int. Cl. C07d *55/50*
U.S. Cl. 260—248 CS 3 Claims

1. A compound of the formula



where

R_f is a polyfluorinated alkyl radical of no more than 12 carbon atoms,

X is a hydrogen atom, the hydroxy group or a hydrolyzable group,

R is a monovalent hydrocarbon radical of no more than 30 carbon atoms or a ACH_2CH_2— radical in which A is a perfluoroalkyl radical of no more than 10 carbon atoms;

n has a value of from 1 to 10 inclusive, and

m has a value of from 1 to 3 inclusive.

3,847,917
AMINO DERIVATIVES OF N-HETEROCYCLICS

Helmut Vorbruggen, Berlin, Germany, assignor to Schering Aktiengesellschaft, Berlin, Germany

No Drawing. Filed Dec. 18, 1972, Ser. No. 315,820
Claims priority, application Germany, Dec. 18, 1971, P 21 63 873.3
Int. Cl. C07d *55/22*
U.S. Cl. 260—249.6 9 Claims

1. A process for preparing amino derivatives of an aromatic N-heterocyclic compound of 5–15 members containing a total of 1–7 hetero atoms which, in addition to the nitrogen atoms, can be nitrogen, oxygen or sulfur, which comprises:

(a) silylating an N-heterocyclic compound selected from the group consisting of oxazoles, imidazoles, pyridines, quinolines, isoquinolines, pyridazines, pyrimidines, pyrazines, triazines, purines, acridines, pteridines, benzopteridines and indolenines bearing at least one of a ring hydroxy and a ring mercapto group, to form a corresponding O-silyl or S-silyl derivative, respectively; and

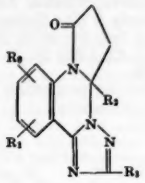
(b) reacting the resultant silyl derivative, in contact with a catalytic amount of a Lewis acid, with ammonia or with a primary or secondary amine or a salt of said amine together with 1–2 moles of tertiary amine base per mole of said salt, to split off the O-silyl and S-silyl groups and form the corresponding amino derivative of said aromatic N-heterocyclic compound.

3,847,918
S-TRIAZOLO[1,5-c]QUINAZOLIN-7(6H)-ONES

Faizulla G. Kathawala, West Orange, N.J., assignor to Sandoz-Wander, Inc., Hanover, N.J.

No Drawing. Filed May 17, 1973, Ser. No. 361,270
Int. Cl. C07d 51/42
U.S. Cl. 260—256.4 F 8 Claims

1. A compound of the formula



where

R_0 and R_1 each independently represent hydrogen, halo having an atomic weight of 19 to 36, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, nitro or trifluoromethyl, provided that when one of R_1 and R_0 is nitro or trifluoromethyl, the other is hydrogen,

R_2 is alkyl of 1 to 4 carbon atoms, and

R_3 is hydrogen or alkyl of 1 to 4 carbon atoms,

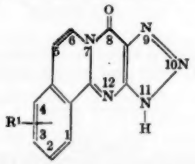
or a pharmaceutically acceptable acid addition salt thereof.

3,847,919
TRIAZOLOPYRIMIDO ISOQUINOLINONE DERIVATIVES

Philip Knowles, Rayleigh, Stuart Malcolm Marshall, Stanford-le-Hope, David Lord Pain, Upminster, and Kenneth Robert Harry Wooldridge, Brentwood, England, assignors to May & Baker Limited, Dagenham, Essex, England

No Drawing. Filed Nov. 16, 1972, Ser. No. 307,173
Claims priority, application Great Britain, Dec. 13, 1971, 57,855/71
Int. Cl. C07d 51/46
U.S. Cl. 260—256.4 F 9 Claims

1. An isoquinoline derivative of the formula:



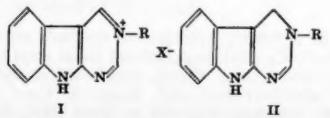
wherein R^1 represents hydrogen, or alkyl or alkoxy of 1 through 10 carbon atoms or benzyl on the carbon atom in the 1-, 2-, 3-, 4- or 5-position of the formula, and pharmaceutically acceptable salts thereof.

3,847,920
3-SUBSTITUTED PYRIMIDO[4,5-b]INDOLES

Sylvester Klutchko, Hackettstown, and Max von Strandtmann, Rockaway Township, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

No Drawing. Filed May 17, 1973, Ser. No. 361,365
Int. Cl. C07d 51/42
U.S. Cl. 260—256.4 F 9 Claims

1. A member selected from the group consisting of compounds of the formulas:



I II

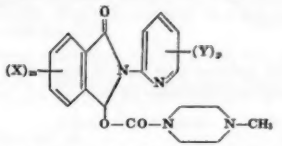
wherein R is a member selected from the group consisting of alkyl, dialkylaminoalkyl, monohydroxyalkyl in which alkyl has 1 to 7 carbon atoms, phenyl, alkylphenyl having a total of 7 to 10 carbon atoms, N-oxide, carboxymethyl, carboxymethyl anion, and X is chloro or bromo or nonexistent in the case of zwitterions.

3,847,921
PHARMACOLOGICALLY ACTIVE 3-PIPERAZINYL-CARBONYLOXY - 2 - PYRIDYL-ISOINDOLIN-1-ONES

Claude Cotrel, Choisy le Roi, Claude Jenmart, Brunoy, and Mayer Naoum Messer, Bievres, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Aug. 18, 1971, Ser. No. 172,929
Claims priority, application France, Aug. 19, 1970, 7030393; Nov. 25, 1970, 7042342; June 28, 1971, 7123465
Int. Cl. C07d 51/70
U.S. Cl. 260—268 BC 6 Claims

1. An isoindoline derivative of the formula:



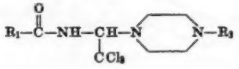
wherein X and Y are each chlorine, bromine, methyl o nitro, and *m* and *p* are each 0 or 1, and non-toxic pharmaceutically acceptable acid addition salts thereof.

3,847,922
1,1,1-TRICHLORO-2-AMIDO-2-PIPERAZINO-ETHANES AND SALTS THEREOF

Walter Ost, Klaus Thomas, and Dietrich Jerchel, Ingelheim am Rhein, Germany, assignors to C. H. Boehringer Sohn, Ingelheim am Rhein, Germany

No Drawing. Continuation-in-part of application Ser. No. 71,262, Sept. 10, 1970, now Patent No. 3,707,477, dated Dec. 26, 1972. This application Sept. 15, 1972, Ser. No. 289,751
Int. Cl. C07d 51/64
U.S. Cl. 260—268 R 2 Claims

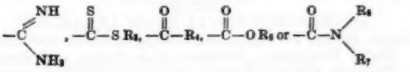
1. A compound of the formula



wherein

R_1 is hydrogen, alkyl of 1 to 7 carbon atoms, allyl or ethoxy, and

R_2 is hydrogen, methyl, phenyl, monochloro-phenyl, pentachloro-phenyl, nitroso, cyano, β-hydroxy-ethyl



where

R_3 is hydrogen, or one equivalent of a sodium, potassium, ammonium, zinc, copper(II) or manganese (II) cation,

R_4 is hydrogen, alkyl of 1 to 4 carbon atoms, monochloro-, dichloro- or trichloro-methyl, phenyl or (2,4-dichlorophenoxy)-methyl,

R_5 is hydrogen, alkyl of 1 to 3 carbon atoms, monohalo-, dihalo- or trihalo-ethyl, β-methoxy-ethyl, cyclohexyl, allyl, phenyl or

R_6 is hydrogen, methyl, allyl or phenyl, and

R_7 is hydrogen or methyl,

or an acid addition salt thereof.

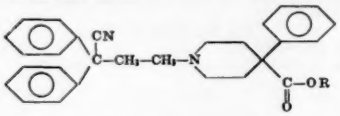
3,847,923

N-[1-(3-CYANO-3,3-DIPHENYLPROPYL)-4-PHENYL-PIPERIDINE - 4-CARBONYLOXY] SUCCINIMIDE AND GLUTARIMIDE

Eunice M. Kreider, Chicago, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed Dec. 15, 1971, Ser. No. 208,442
Claims priority, application Great Britain, Dec. 16, 1970, 59,686/70
The term of this patent subsequent to Feb. 5, 1991, has been disclaimed
Int. Cl. C07d *29/32*
U.S. Cl. 260—281 6 Claims

1. A compound selected from the group consisting of compounds of the formula



and the acid addition salts thereof, wherein R represents a succinimido or glutarimido radical.

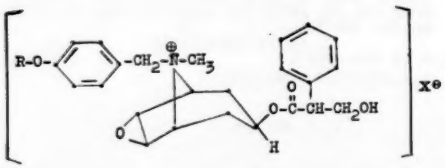
3,847,924

CERTAIN SCOPOLAMMONIUM COMPOUNDS

Satoru Tanaka and Kazunori Hashimoto, Tokyo, Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

No Drawing. Filed May 31, 1973, Ser. No. 365,728
Claims priority, application Japan, June 12, 1972, 47/57,633
Int. Cl. C07d *43/06*
U.S. Cl. 260—292 3 Claims

1. Scopolammonium quaternary salts represented by the formula:



wherein R is a lower alkyl group and X is a halogen atom.

3,847,925

BENZENESULFONYL SEMICARBAZIDES

Laszlo Beregi, Boulogne, Pierre Hugon, Rueil-Malmaison, Pierre Desnoyers, Fontenay Aux Roses, and Jacques Duhault, Chatou, France, assignors to Societe en nom collectif "Science et Cie, Societe Francaise de Recherche Medicale, Suresnes, France

No Drawing. Filed June 29, 1972, Ser. No. 267,445
Claims priority, application Great Britain, July 15, 1971, 33,203/71
Int. Cl. C07d *29/34*
U.S. Cl. 260—293.73 5 Claims

1. A compound selected from the group consisting of:
(A) benzenesulfonyl semicarbazides of the formula:

wherein Het is selected from the group consisting of pyrrolidinyl, piperidinyl, methylpiperidinyl, dimethylpiperidinyl, and azacycloheptyl each of them bonded to the —NH— group by its nitrogen atom; and

(B) physiologically tolerable basic addition salts thereof.

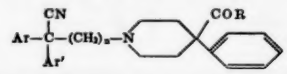
3,847,926

PROCESS FOR THE PRODUCTION OF DIPHENOXYLATE, ITS DERIVATIVES AND ITS SALTS USING AN AQUEOUS DMF SOLVENT SYSTEM

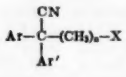
Humberto Flores Beltran, Mexico, Mexico, assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 20, 1972, Ser. No. 273,416
Int. Cl. C07d *29/32*
U.S. Cl. 260—293.75 9 Claims

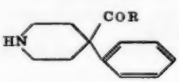
1. In a process for the production of compounds of the following structural formula



and their pharmaceutically acceptable salts wherein *n* is 2 or 3, Ar and Ar' are aryl radicals of less than 9 carbon atoms and R is a lower alkyl, lower alkyloxy or a lower alkenyloxy radical containing 1 to 6 carbon atoms or a cyclopentyloxy, cyclohexyloxy or phenylalkyloxy radical, cyclopentyloxy, cyclohexyloxy or phenylalkyloxy radical, the improvement which comprises condensing a compound of the formula



wherein Ar, Ar' and *n* are as defined above and X is chloro or bromo with a compound of the formula



wherein R is as defined above in a solvent system consisting essentially of water and dimethylformamide.

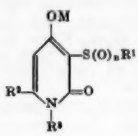
3,847,927

SULFUR-CONTAINING HYDROXYPYRIDONES

Joseph E. Dunbar, Robert F. Harris, and James R. McCarthy, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

No Drawing. Filed Dec. 20, 1972, Ser. No. 316,724
Int. Cl. C07d *31/50*
U.S. Cl. 260—294.8 F 13 Claims

1. A compound represented by the formula



wherein M represents hydrogen or an alkali metal, R^1 represents C_1–C_4 alkyl, isopentyl and linear alkyl having up to 20 carbon atoms, phenyl, halophenyl, nitrophenyl, 2-(lower alkylthio)ethyl, allyl, benzyl or lower alkylphenyl, R^2 represents hydrogen or lower alkyl, R^3 represents hydrogen or lower alkyl and *n* represents an integer from 0 to 2.

3,847,928

CERTAIN ETHERS, ESTERS OR NON-TOXIC ACID ADDITION SALT DERIVATIVES OF 2,2-DI- AND 2,2,3 - TRI-LOWER ALKYL CHROMAN- AND CHROMEN-OLS

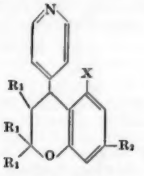
Raj Kumar Razdan, Belmont, Mass., and William R. Thompson, Ithaca, N.Y., assignors to Beecham Group Limited, Brentford, Middlesex, England

No Drawing. Application June 9, 1971, Ser. No. 151,578, now Patent No. 3,726,883, dated Apr. 10, 1973, which is a continuation-in-part of application Ser. No. 36,466, May 11, 1970, which is a continuation-in-part of application Ser. No. 1,543, Jan. 8, 1970, which is a continuation-in-part of application Ser. No. 866,743, Oct. 15, 1969, which in turn is a continuation-in-part of application Ser. No. 630,808, Apr. 14, 1967, all now abandoned. Divided and this application Oct. 25, 1972, Ser. No. 300,443

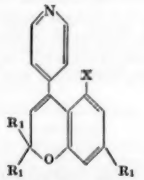
Int. Cl. C07d *31/34*

U.S. Cl. 260—295 F 15 Claims

1. A member of the group consisting of a compound having the formula:



and a compound having the formula:



and a non-toxic acid addition salt thereof, wherein

R_1 is lower alkyl having 1 to 6 carbon atoms,

R_2 is straight chain alkyl having 1 to 20 carbon atoms, 2-heptyl, methyloctyl, or cycloalkyl-lower-alkyl, the cycloalkyl part having 3 to 8 carbon atoms, and

X is lower alkoxy or straight chain alkanoyloxy of 2 to 20 carbon atoms, benzoyloxy, naphthoyloxy, phosphate, carbonate, malonate, succinate, citrate, phosphate, hemisuccinate, or lower alkyl carbonate, exclusive of amino acid esters.

3,847,929

HYDROXY OR ALKOXY DERIVATIVES OF 5-HALO-1H-PYRAZOLO[3,4-b]PYRIDINES

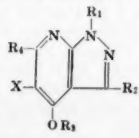
Theodore Denzel, Nurnberg, and Hans Hoehn, Tegernheim, Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

No Drawing. Filed Mar. 16, 1973, Ser. No. 342,020

Int. Cl. C07d *31/42*

U.S. Cl. 260—296 H 12 Claims

1. A compound of the formula



wherein

R_1 is hydrogen, methyl, ethyl, phenyl, benzyl or phenethyl;

R_2 is hydrogen methyl or ethyl;

R_3 is hydrogen, lower alkyl, phenyl, phenyl-lower alkyl, di-lower alkylamino-lower alkyl, lower alkylmercapto-lower alkyl or lower alkoxy-lower alkyl;

R_4 is hydrogen, methyl, ethyl or phenyl, and X is halogen,

and physiologically acceptable acid addition salts thereof.

3,847,930

HYDROXYARYL-TETRAMENTHYL-DEHYDROPIPERIDINES

Donald Richard Randell, Stockport, and Malcolm John Smith, Marple, England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

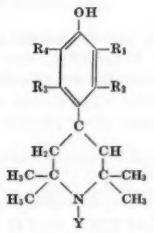
No Drawing. Filed Nov. 28, 1972, Ser. No. 310,181

Claims priority, application Great Britain, Nov. 30, 1971, 55,419/71; July 14, 1972, 32,947/72

Int. Cl. C07d *31/28*

U.S. Cl. 260—297 R 6 Claims

1. A compound having the formula



wherein

R_1 and R_4 are selected from hydrogen, methyl, ethyl, n-propyl, isopropyl, sec-butyl, t-butyl, 1,1-dimethylpropyl, 1,1-dimethylbutyl, 2-octyl, cyclohexyl, 1-methylcyclohexyl, benzyl, α,α-dimethylbenyl and phenyl,

R_2 and R_3 are hydrogen, methyl or ethyl groups and

Y is hydrogen, O or methyl.

3,847,931

OXADIAZOLIDINE-3,5-DIONES

Bernd Zeeh, Ludwigshafen, Wolfgang Rohr, Mannheim, Karl-Heinz Koenig, Frankenthal, and Adolf Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 26, 1972, Ser. No. 221,064

Claims priority, application Germany, Feb. 5, 1971, P 21 05 378.1

Int. Cl. C07d *85/52*

U.S. Cl. 260—307 B 4 Claims

1. A substituted 1,2,4-oxadiazolidine-3,5-dione selected from the group consisting of 2-(m-3-methylpentyn-(1)-yl-(3)-carbamoyloxyphenyl) - 4 - methyl-1,2,4-oxadiazolidine-3,5-dione; 2 - (m-3-methylbuten-(1)-yl-(3)-carbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine - 3,5 - dione; and 2 - (m - 3 - methylbutyn-(1)-yl-(3)-carbamoyloxyphenyl)-4-methyl-1,2,4-oxadiazolidine-3,5-dione.

3,847,932

BENZIMIDAZOLE COMPOUNDS AND PESTICIDAL PREPARATIONS CONTAINING THEM

Stefan Janiak, Basel, and Otto Rohr, Therwil, Switzerland, assignors to Ciba-Geigy AG, Basel, Switzerland

No Drawing. Continuation-in-part of application Ser. No. 769,699, Oct. 22, 1968, now Patent No. 3,652,580, dated Mar. 28, 1972. This application Jan. 10, 1972, Ser. No. 216,782

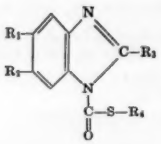
Claims priority, application Switzerland, Oct. 26, 1967, 15,005/67

The term of this patent subsequent to Mar. 28, 1989, has been disclaimed

Int. Cl. C07d *49/38*

U.S. Cl. 260—309.2 4 Claims

1. A benzimidazole compound of the formula



wherein R_1, and R_2 may be identical or different and are hydrogen, halogen, lower alkyl, nitro or trifluoromethyl, R_3 is hydrogen, lower alkyl or cycloalkyl of 3 to 6 carbon atoms, and R_4 is lower alkyl, phenyl, phenyl mono- or disubstituted by halogen, lower alkyl or nitro, or benzyl.

3,847,933

ACID CATALYZED ALKYLATION OF HYDANTOIN

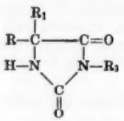
William E. Tyler III, Berkeley Heights, N.J., assignor to Esso Research and Engineering Company

No Drawing. Continuation-in-part of abandoned application Ser. No. 96,643, Dec. 9, 1970. This application Sept. 18, 1972, Ser. No. 289,866

Int. Cl. C07d *49/32*

U.S. Cl. 260—309.5 7 Claims

1. A process for the production of a 1-alkylated hydantoin which comprises reacting an olefin of from 3 to 8 carbon atoms and a hydantoin, said hydantoin having the formula:



wherein R and R_1 are selected from the group consisting of hydrogen, lower alkyl, benzyl and phenyl, and R_3 is selected from the group consisting of hydrogen, lower alkyl and benzyl, in the presence of a strong acid selected from the group consisting of sulfuric acid, phosphoric acid, fluorosulfonic acid, phosphoric acid, BF_3, hydrofluoric acid and hydrochloric acid, and said acid being present in an amount sufficient to at least partially dissolve said hydantoin and maintain the reaction in a fluid state, at a temperature in the range from about −75° C. to about 25° C.

3,847,934

7-[IMIDAZOLINYL-(2)-AMINO]-INDAZOLES

Peter Neumann, Bern, Switzerland, assignor to Wander Ltd. (also known as Wander AG), Bern, Switzerland

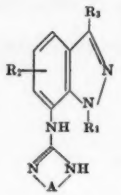
No Drawing. Filed Nov. 29, 1972, Ser. No. 310,204

Claims priority, application Switzerland, Dec. 1, 1971, 17,453/71; Oct. 12, 1972, 14,893/72

Int. Cl. C07d *49/34*

U.S. Cl. 260—309.6 23 Claims

1. A compound of the formula



where

R_1 is hydrogen or alkyl of 1 to 3 carbon atoms,

R_2 is hydrogen, fluorine, chlorine, bromine or alkyl, alkoxy or alkylthio each of 1 to 3 carbon atoms,

R_3 is hydrogen, fluorine, chlorine, bromine, alkyl or alkoxy each of 1 to 3 carbon atoms or hydroxy, and

A is dimethylene, hydroxydimethylene or dimethylene mono-substituted by alkyl of 1 to 3 carbon atoms,

or a pharmaceutically acceptable acid addition salt thereof.

3,847,935

5-SUBSTITUTED 1-(3H,1,4-BENZODIAZEPIN-2-YL)-2-IMIDAZOLIDINONES

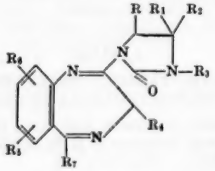
Robert Bruce Moffett, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Filed Apr. 12, 1972, Ser. No. 243,471

Int. Cl. C07d *53/06*

U.S. Cl. 260—309.7 7 Claims

1. A compound of the formula



wherein R, R_1 and R_2 are each selected from the group consisting of hydrogen and lower alkyl of 1 to 3 carbon atoms, inclusive; R_3 is selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbon atoms, inclusive, and lower alkenyl of 3 to 4 carbon atoms, inclusive; R_4 is selected from the group consisting of hydrogen, alkyl of 1 to 3 carbon atoms, inclusive, hydroxy, acetoxy and propionoxy; R_5 is hydrogen; R_6 is selected from the group consisting of hydrogen and halogen; and R_7 is selected from the group consisting of phenyl, mono-halophenyl, 2-pyridyl and 4-pyridyl.

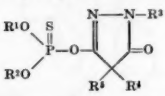
3,847,936

O,O-DIALKYL-O-[1,2-DIAZOLIDIN-ONES-5-YL-3]-THIONOPHOSPHATES

Heinrich Adolphi, Limburgerhof, Wolfram Dietsche, Altrip, Franz Merger, Frankenthal, Peter Beutel, Mannheim, and Rolf Huber, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Dec. 7, 1972, Ser. No. 312,974
Claims priority, application Germany, Dec. 18, 1971, P 21 63 063.7
Int. Cl. C07f 9/16
U.S. Cl. 260—310 A 6 Claims

1. A dialkylthionophosphoric ester of the formula



where R^1 and R^2 are identical or different and each denotes lower alkyl, R^3 denotes hydrogen, lower alkyl, phenyl or chlorophenyl, R^4 and R^5 are identical or different and each denotes lower alkyl, lower alkoxymethyl, lower alkoxyethyl, or together denote lower alkoxymethylene or pentamethylene.

3,847,937

PROCESS FOR THE PREPARATION OF INDOLES

Pietro Moggi and Ugo Romano, Milan, Italy, assignors to Snam Progetti S.p.A., Milan, Italy

No Drawing. Filed May 12, 1972, Ser. No. 252,885
Claims priority, application Italy, May 13, 1971, 24,466/71
Int. Cl. C07d 27/56
U.S. Cl. 260—319.1 8 Claims

1. A process for preparing indole by pyrolysis, comprising subjecting 1,1'-diphenylaminoethane to a temperature of about 500° C. to about 700° C. for a time from about 2 to about 5 seconds.

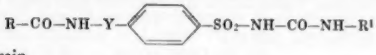
3,847,938

BENZENE-SULFONYL SEMICARBAZIDES AND PROCESS FOR PREPARING THEM

Helmut Weber, Frankfurt am Main, Walter Aumüller, Kelkheim, Taunus, Rudi Weyer, Frankfurt am Main, Karl Muth, Kelkheim, Taunus, and Kurt Stach, Mannheim-Waldhof, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Original application Aug. 7, 1968, Ser. No. 750,747, now Patent No. 3,705,151, dated Dec. 5, 1972. Divided and this application June 2, 1972, Ser. No. 259,299
Claims priority, application Germany, Aug. 12, 1967, F 53,221
Int. Cl. C07d 27/48
U.S. Cl. 260—326.1 4 Claims

1. A benzene-sulfonyl semicarbazide of the formula



wherein

R represents

(a) phenyl which may carry one or two substituents selected from the group consisting of lower alkyl, lower alkenyl, lower alkoxy, lower alkenoxy, lower alkoxyalkoxy, acetyl, halogen, trifluoro-methyl, or the methylene-dioxy group,

(b) thienyl which may carry one or two substituents selected from the group consisting of halogen, lower alkyl, lower alkoxy, lower alkenyloxy, lower alkoxyalkoxy, phen-loweralkoxy, or polymethylene chain containing from 3 to 4 carbon atoms, linked at its two ends to the thienyl group,

Y represents $—CH_2—CH_2—$, $—CH_2—CH—(CH_3)—$ or $—CH—(CH_3)—CH_2—$,

R^1 represents 4,7-endoalkylene-hexahydro-iso-indoline or 4,7-endoalkylene-tetrahydro-iso-indoline, having 1 to 2 carbon atoms in the endoalkylene group, in the case of tetrahydrocompounds the double linkage being in 5,6-position; 4,7-endocyclobutylene-hexahydro-iso-indoline; 4,7-endocyclobutylene-Δ^5-tetrahydro-iso-indoline; 4,7-endocyclopropylene-Δ^5 - tetrahydro-iso-indoline; or 4,7-endocyclopropenylene-hexahydro-iso-indoline; and salts thereof formed from pharmaceutically acceptable bases.

3,847,939

3,5-DICHLOROPHENYLCARBAMYL PYRROLIDINE

Alexander Mihailovski, Berkeley, Calif., assignor to Stauffer Chemical Company, New York, N.Y.

No Drawing. Filed Mar. 13, 1972, Ser. No. 234,334
Int. Cl. C07d 27/02
U.S. Cl. 260—326.4 1 Claim

1. 3,5-dichlorophenylcarbamylpyrrolidine.

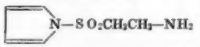
3,847,940

AMINOETHANESULFONYL DERIVATIVES AND THEIR PRODUCTION

Shun-ichi Naito, 35 Murasakino Kamitoridacho, Kita-ku, Kyoto, Japan

No Drawing. Original application July 19, 1971, Ser. No. 164,007, now Patent No. 3,743,647. Divided and this application Dec. 1, 1972, Ser. No. 311,276
Int. Cl. C07d 27/24
U.S. Cl. 260—326.9 2 Claims

1. A compound of the formula:



and the pharmaceutically acceptable acid addition salts thereof.

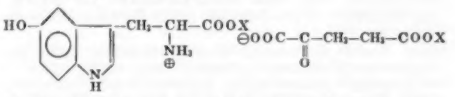
3,847,941

5-HYDROXYTRYPTOPHAN ALPHA-KETO-GLUTARATE AND ITS DERIVATIVES

Miguel Fernandez Brana and Christobal Martinez Roldan, Madrid, Spain, assignors to Laboratorios Made, S.A., Madrid, Spain

No Drawing. Filed June 11, 1973, Ser. No. 368,829
Int. Cl. C07d 27/00, 27/56
U.S. Cl. 260—326.14 1 Claim

1. A compound of the formula:



in which X is hydrogen, alkali or alkaline earth metals, or basic organic radical compounds.

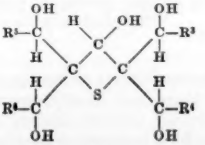
3,847,942

NOVEL SUBSTITUTED THIETANES AND THEIR PREPARATION

James N. Kellen and Peter E. Throckmorton, Lake, Minn., assignors to Ashland Oil, Inc., Ashland, Ky.

No Drawing. Continuation of application Ser. No. 622,429, Mar. 13, 1967. This application Aug. 3, 1972, Ser. No. 277,757
Int. Cl. C07d 61/00
U.S. Cl. 260—327 R 6 Claims

1. A compound having the formula:



wherein R^3, R^4, R^5, and R^6 are hydrogen alkyl, furyl or phenyl.

3,847,943
PREPARING ANETHOLE TRITHIONE USING SULFOLANE SOLVENT

Paul F. Warner, Phillips, Tex.
(% Phillips Petroleum Co., Bartlesville, Okla. 74004)

No Drawing. Filed Sept. 8, 1972, Ser. No. 287,248
Int. Cl. C07d *71/02*
U.S. Cl. 260—327 C 3 Claims

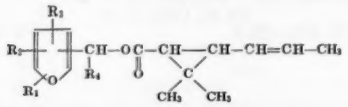
1. A process for the preparation of anethole trithione which comprises reacting anethole with sulfur at an elevated temperature of the order of 350 to 450° F. in the presence of sulfolane as a solvent.

3,847,944
PROPENYLCYCLOPROPANECARBOXYLATES

Nobuo Ohno and Nobushige Itaya, Ikeda, Toshio Mizutani and Shigeyoshi Kitamura, Toyonaka, Takashi Matsuo, Amagasaki, and Yositosi Okuno, Toyonaka, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

No Drawing. Filed Dec. 27, 1971, Ser. No. 212,637
Claims priority, application Japan, Dec. 25, 1970, 45/129,006; May 12, 1971, 46/32,027; July 5, 1971, 46/49,739
Int. Cl. C07d *5/16*
U.S. Cl. 260—332.2 R 7 Claims

1. A compound of the formula



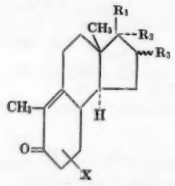
wherein propenyl group on the cyclopropane ring is cis or trans configuration regarding the double bond, and R_1 is a C_1–C_3 alkyl, allyl, propargyl, benzyl, thenyl, furylmethyl, phenoxy or lower alkyl-substituted benzyl, thenyl, furylmethyl or phenoxy, R_2 and R_3 are hydrogen or methyl respectively, or R_1 and R_2 are bonded at respective ends of the adjacent two groups to form a C_3–C_4 poylmethylene group, R_4 is hydrogen, lower alkyl, lower alkenyl or lower alkinyl.

3,847,945
PROCESSES FOR THE PREPARATION OF DESA-ANDROST - 9-EN-5-ONES AND DESA-PREGN-9-EN-5-ONES

Milan Radoje Uskokovic, Upper Montclair, N.J., assignor to Hoffmann-La Roche, Inc., Nutley, N.J.

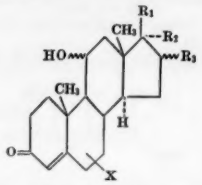
No Drawing. Application Oct. 20, 1965, Ser. No. 499,094, now Patent No. 3,574,761, dated Apr. 13, 1971, which is a continuation-in-part of application Ser. No. 400,206, Sept. 29, 1964, now Patent No. 3,412,107. Divided and this application June 17, 1968, Ser. No. 737,329
Int. Cl. C07d *11/00*
U.S. Cl. 260—338 12 Claims

1. A process for the preparation of a desA-androst-9-en-5-one of the formula:



wherein R_1 is hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy, or lower alkoxy-lower alkoxy; R_2 is hydrogen or lower alkyl; R_1 and R_2 taken together are selected from the group consisting of (17β-OH,17α-lower alkanoic acid lactone), lower alkylenedioxy and oxo; R_3 is hydrogen, lower alkyl, hydroxy, lower alkanoyloxy, carboxyloweralkanoyloxy, benzoyloxy, tetrahydropyranyloxy, benzyloxy, benzhydryloxy, trityloxy, allyloxy, or lower alkoxy-lower alkoxy; and X is a substituent in the 6- or 7-position selected from the group consisting of hydrogen, lower alkyl, lower alkylthio, lower alkanoylthio and halogen;

comprising esterifying an 11-hydroxy-androst-4-en-3-one having the formula:



wherein R_1, R_2, R_3 and X are as above;

to form a leaving group in the 11-position selected from the group consisting of toluene sulfonate, lower alkyl sulfonate and nitrophenyl sulfonate; subjecting the resulting androst-4-en-3-one with the leaving group in the 11-position to oxidative ring opening to form the corresponding 5 - oxo - 11 - (leaving group)-3,5-secoA-norandrostan-3-oic acid; forming an alkali metal salt of said acid; and pyrolyzing said alkali metal salt by heating said alkali metal salt to a temperature of about 200° C. to about 350° C. to form said desA-androst-9-en-5-one.

3,847,946
HYDROGENATION

Marvin M. Johnson and Donald C. Tabler, Bartlesville, Okla., assignors to Phillips Petroleum Company

No Drawing. Original application Apr. 2, 1970, Ser. No. 25,239, now Patent No. 3,676,332. Divided and this application Mar. 9, 1972, Ser. No. 233,294
Int. Cl. C07d *63/02*
U.S. Cl. 260—329.3 13 Claims

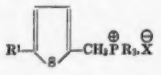
1. A process for selectively hydrogenating the ring unsaturation of heterocyclic sulfur-containing compounds contained in a hydrocarbon feedstream which comprises contacting said feedstream with hydrogen and a molybdenum-arsenic catalyst consisting essentially of about 2 to 20 weight percent molybdenum and a molybdenum to arsenic weight ratio of about 1:1 to about 5:1 and an inorganic oxide support under hydrogenation conditions, said catalyst having been reduced with hydrogen prior to said contacting.

3,847,947
QUATERNARY THENYL PHOSPHONIUM SALTS

Peter F. Epstein, Prairie Village, Kans., assignor to Chemagro Corporation

No Drawing. Continuation of abandoned application Ser. No. 18,745, Mar. 11, 1970. This application July 3, 1972, Ser. No. 268,321
Int. Cl. C07d *63/14*
U.S. Cl. 260—332.5 7 Claims

1. A 2-thenyl-phosphonium salt of the formula



in which

R^1 is halo,
R each individually is butyl, and
X is a monovalent anion selected from the group consisting of halide, thiocyanate, nitrate, O,O-diethyldithiophosphate, O-ethyl xanthate and N,N-dimethyl dithiocarbamate.

3,847,948

PROCESS FOR THE PREPARATION OF NOVEL DIHYDROXY-1,4-DIOXANES

Nobuo Yamamoto, Minami-Ashigara-machi, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

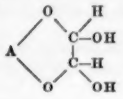
No Drawing. Continuation-in-part of abandoned application Ser. No. 850,673, Aug. 15, 1968. This application June 4, 1971, Ser. No. 150,164

Claims priority, application Japan, Aug. 17, 1968, 43/58,799

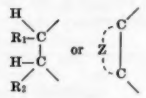
Int. Cl. C07d *15/12, 15/18*

U.S. Cl. 260—340.3 15 Claims

1. A dihydroxy-1,4-dioxane compound represented by the following formula:



wherein A represents



and wherein R_1 represents hydrogen, alkyl of from 1 to 18 carbon atoms, monohaloalkyl of from 1 to 8 carbon atoms, alkoxyalkyl having a total number of from 2 to 13 carbon atoms, phenyl or phenoxyalkyl having a total number of from 7 to 18 carbon atoms; R_2 represents alkyl of from 1 to 18 carbon atoms, monohaloalkyl of from 1 to 8 carbon atoms, alkoxyalkyl having a total number of from 2 to 13 carbon atoms, phenyl or phenoxyalkyl having a total number of from 7 to 18 carbon atoms; and Z represents carbon-to-carbon chain of 4 carbon atoms to form a non-substituted or mono-substituted aromatic carbon ring of 6 carbon atoms, the substituent on said ring being alkyl of from 1 to 5 carbon atoms.

3,847,949

MACROCYCLIC HETERO IMINE COMPLEXING AGENTS

Charles John Pedersen, Salem, N.J., and Marilyn H. Bromels, Talleyville, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Jan. 8, 1973, Ser. No. 321,575

Int. Cl. C07d *19/00*

U.S. Cl. 260—340.3 1 Claim

1. 5,6,14,15 - dibenzo - 4,7,13,16 - tetraoxa - 1,10 - diazacyclooctadeca-5,14-diene.

3,847,950

α,α-DIALKYLPHENETHYLAMINE DERIVATIVES

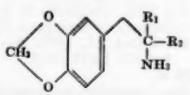
John T. Suh, Mequon, and Thomas M. Bare, Milwaukee, Wis., assignors to Colgate-Palmolive Company, New York, N.Y.

No Drawing. Filed Sept. 28, 1972, Ser. No. 293,126

Int. Cl. C07d *13/10*

U.S. Cl. 260—340.5 3 Claims

1. A compound selected from the class consisting of a compound of the formula



in which R_1 and R_2 are lower alkyl, and pharmaceutically acceptable salts thereof.

3,847,951

INSECTICIDAL N-THIO-SUBSTITUTED CARBAMATES OF DIHYDROBENZOFURANOLS

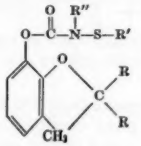
Gustave K. Kohn, Berkeley, Calif., and Melancthon S. Brown, deceased, late of Berkeley, Calif., by Gustave K. Kohn, special administrator of the estate of said Melancthon S. Brown, assignor to Chevron Research Company, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned applications Ser. No. 235,796 and Ser. No. 235,797, both Mar. 17, 1972, which are continuation-in-parts of application Ser. No. 230,117, Feb. 28, 1972, now Patent No. 3,792,169, which is a division of application Ser. No. 855,421, Sept. 4, 1969, now Patent No. 3,663,594, which in turn is a continuation-in-part of abandoned application Ser. No. 764,299, Oct. 1, 1968. This application Dec. 21, 1972, Ser. No. 317,317

Int. Cl. C07d *5/32*

U.S. Cl. 260—346.2 13 Claims

1. A compound of the formula



wherein

R and R″ individually are hydrogen or alkyl of 1 to 4 carbon atoms;

R′ is alkyl of 1 to 12 carbon atoms, alkenyl of 2 to 12 carbon atoms, monocyclic or bicyclic aryl of 6 to 10 carbon atoms, alkyl of 2 to 12 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, alkenyl of 2 to 12 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, or monocyclic or bicyclic aryl of 6 to 10 carbon atoms substituted with 1 to 5 fluorine, chlorine or bromine atoms, or 1 to 2 nitro groups.

3,847,952

PROCESS FOR PRODUCING ALCOHOLS OF THE FURAN SERIES

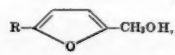
Vladimir Alexandrovich Smirnov, ul. B. Khmelnitskogo 151, kv. 21, Novocherkassk, U.S.S.R.; Vladimir Grigorievich Kulnevich, ulitsa Sadovaya 214, kv. 2; and Galina Nikolaevna Soltovets, 4 proezd Krupskoi 4, kv. 51, both of Krasnodar, U.S.S.R.; and Dmitry Platonovich Semchenko, ulitsa B. Khmelnitskogo 147, Novocherkassk, U.S.S.R.

No Drawing. Continuation of abandoned application Ser. No. 777,194, Nov. 19, 1968. This application June 28, 1971, Ser. No. 157,608

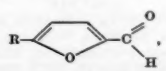
Int. Cl. C07d *5/20*

U.S. Cl. 260—347.8 7 Claims

1. A method of producing an alcohol of the furan series having the formula:



wherein R is H, CH_3, CH_2OH, Cl or Br, said method comprising feeding an aqueous solution of an aldehyde of the furan series having the formula:



wherein R is defined above and containing from 2 to 5% by wt. of an inorganic or organic acid onto an amalgam

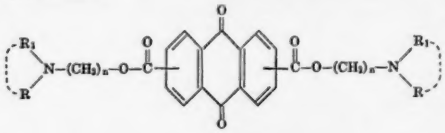
of an alkali metal of 0.1–3.0 N concentration at a rate providing decomposition of the amalgam of from 800 to 3000 a./m.² while saturating the aldehyde solution with carbon dioxide to neutralize alkali developed during amalgam decomposition.

3,847,953
ANTHRAQUINONE DERIVATIVES

Arthur D. Sill, Cincinnati, Ohio, and Robert W. Fleming, Ann Arbor, Mich., assignors to Richardson-Merrell Inc., New York, N.Y.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,239
Int. Cl. C07c 93/20
U.S. Cl. 260—376 6 Claims

1. A bis-basic ester of anthraquinone having the general formula:



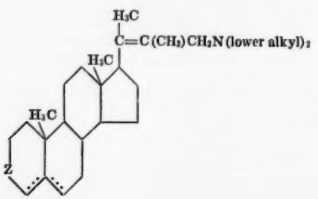
wherein n is an integer of from 2 to 6; R and R_1 are each selected from the group consisting of hydrogen, lower alkyl having from 1 to 6 carbon atoms, cycloalkyl having from 3 to 6 carbon atoms, alkenyl having from 3 to 6 carbon atoms in which the unsaturation is in a position other than in the 1-position of the alkenyl group, and when R and R_1 are taken together with the nitrogen atom to which they are attached represent the pyrrolidinyl, piperidino or morpholino radicals; and the pharmaceutically acceptable acid addition salts thereof.

3,847,954
3-OXYGENATED 23-DI(LOWER ALKYL)AMINO-22-METHYL-24-NORCHOLA-4/5,20(22)-DIENES AND INTERMEDIATES

George R. Lenz, Glenview, Ill., assignor to G. D. Searle & Co., Chicago, Ill.

No Drawing. Filed July 30, 1973, Ser. No. 383,764
Int. Cl. C07c 169/32, 169/34
U.S. Cl. 260—397.1 14 Claims

1. A compound of the formula



wherein Z represents β-(lower alkanoyloxy)methylene, β-hydroxymethylene, or carbonyl and the dotted line denotes Δ^4 unsaturation when Z represents carbonyl and Δ^5 unsaturation otherwise.

3,847,955
1,24,25-TRIHYDROXYCHOLECALCIFEROL

Hector F. De Luca, Madison, Wis., assignor to Wisconsin Alumni Research Foundation, Madison, Wis.

No Drawing. Filed July 16, 1973, Ser. No. 379,621
Int. Cl. C07c 169/48, 171/08
U.S. Cl. 260—397.2 1 Claim

1. 1,24,25-trihydroxycholecalciferol.

ERRATUM

For Class 260—404 see:
Patent No. 3,847,047

3,847,956
2-HYDROPEROXYCARBOXYLIC ACIDS AND THEIR PREPARATION

Leonard S. Silbert, Philadelphia, Philip E. Pfeffer, Warrington, and Dolores A. Konen, Philadelphia, Pa., assignors to the United States of America as represented by the Secretary of Agriculture

No Drawing. Filed Apr. 6, 1973, Ser. No. 348,554
Int. Cl. C08h 17/36
U.S. Cl. 260—413 18 Claims

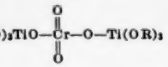
1. A process for the preparation of 2-hydroperoxycarboxylic acids comprising adding slowly to oxygen-saturated ethyl ether at about —80° C a dianion solution of an aliphatic carboxylic acid, warming the reaction mixture to about —10° C, acidifying the mixture with dilute hydrochloric acid and extracting out the 2-hydroperoxycarboxylic acid with ethyl ether.

3,847,957
CHROMYL BIS-(TRIORGANOTITANATES) AND RELATED COMPOUNDS

David E. Boone, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Original application Mar. 24, 1972, Ser. No. 237,922, now Patent No. 3,752,795. Divided and this application Feb. 20, 1973, Ser. No. 334,009
Int. Cl. C07f 7/28
U.S. Cl. 260—429.5 6 Claims

1. A compound of the formula:



wherein R is a hydrocarbon radical selected from the group consisting of alkyl, alkaryl, aryl and cycloalkyl radicals.

3,847,958
FERROCENE-CONTAINING MONOMERS

Travis E. Stevens and Samuel F. Reed, Jr., Huntsville, Ala., assignors to the United States of America as represented by the Secretary of the Army

No Drawing. Original application July 31, 1969, Ser. No. 849,254. Divided and this application May 18, 1971, Ser. No. 144,283
Int. Cl. C07f 15/02
U.S. Cl. 260—439 CY 3 Claims

1. A polymerizable monomer selected from pentaerythritol methacrylate tris (ferrocenoate) and pentaerythritol acrylate tris (ferrocenoate).

3,847,959
PROCESS OF PREPARING A ZEROVALENT NICKEL COMPLEX WITH ORGANIC PHOSPHORUS COMPOUNDS

Howard E. Shook, Jr., Orange, Tex., and John B. Thompson, Wilmington, Del., assignors to E. I. du Pont de Nemours and Company, Wilmington, Del.

No Drawing. Filed Oct. 25, 1972, Ser. No. 300,823
Int. Cl. C07f 15/02
U.S. Cl. 260—439 R 12 Claims

1. A process for preparing a zerovalent complex of nickel with an organic phosphorus compound of the formula PZ_3 wherein Z is OR and R is a hydrocarbyl aryl radical having up to 18 carbon atoms which comprises

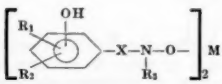
(a) contacting nickel chloride with a reactant mixture consisting essentially of an organic nitrile of the group consisting of 3-pentenenitrile, 4-pentenenitrile, adiponitrile, methylglutaronitrile, and ethylsuccinonitrile and a zinc halide of the group consisting of zinc chloride, zinc bromide and zinc iodide, the zinc halide being present in an amount to provide a mole ratio of zinc halide with respect to nickel chloride to be dissolved of at least 2, and agitating the resulting mixture at a temperature in the range of 25–140° C. to effect a desired degree of solution of nickel chloride in the reactant mixture and (b) thereafter contacting the dissolved nickel chloride with the organic phosphorus compound PZ_3 and a finely-divided reducing metal which is more electropositive than nickel in the reactant mixture containing PZ_3 and maintaining the reactant mixture at a temperature in the range of 60–115° C. to produce the zerovalent nickel complex of PZ_3.

3,847,960
ORGANIC COMPOUNDS

Lajos Avar, Binningen, Basel-Land, Kurt Hofer, Munchenstein, Basel-Land, and Martin Preiswerk, Basel, Switzerland, assignors to Sandoz Ltd., also known as Sandoz AG, Basel, Switzerland

No Drawing. Filed Apr. 9, 1973, Ser. No. 349,641
Claims priority, application Switzerland, Apr. 13, 1972, 5,481/72
Int. Cl. C07j *15/04, 1/08, 3/06*
U.S. Cl. 260—439 R **19 Claims**

1. A compound of formula I,



I

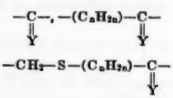
in which

R_1 signifies a tertiary alkyl radical of 4 to 14 carbon atoms or a tertiary cycloalkyl radical of up to 14 carbon atoms and containing 5 to 7 ring carbon atoms, which tertiary alkyl radical or tertiary cycloalkyl radical is in an ortho position to the hydroxyl group,

R_2 signifies a hydrogen atom, an alkyl radical of 1 to 20 carbon atoms, an alkoxy radical of 1 to 20 carbon atoms, a cycloalkylalkyl radical of up to 20 carbon atoms, an aralkyl of up to 20 carbon atoms, a cycloalkyl radical, an alkylcycloalkyl radical of up to 20 carbon atoms, an unsubstituted phenyl radical or a phenyl radical substituted by 1 or 2 alkyl radicals of 1 to 6 carbon atoms, any cycloalkyl moiety or radical having 5 to 7 ring carbon atoms,

R_3 signifies a hydrogen atom, an alkyl radical of 4 to 8 carbon atoms, an unsubstituted phenyl or naphthyl radical or a phenyl or naphthyl radical substituted by up to 2 alkyl radicals of 1 to 6 carbon atoms or by up to two halogen atoms, cyano or nitro groups,

X signifies



or

where

Y signifies an oxygen or sulphur atom and

n signifies 1, 2, 3, 4, 5 or 6, and

M signifies a divalent nickel, zinc, copper or manganese ion.

3,847,961
FLUOROALIPHATICTHIOMETHYLSILOXANES

Robert J. Koshar, Village of Mahtomedi, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

No Drawing. Filed Apr. 2, 1973, Ser. No. 346,992
Int. Cl. C07f *7/08*
U.S. Cl. 260—448.2 N **18 Claims**

1. An organosiloxane containing at least one unit of the formula

wherein

R_f is a highly fluorinated monovalent fluoroaliphatic radical having 1 to 18 carbon atoms,

R is an organic radical selected from methyl, ethyl, and phenyl groups,

Y is selected from methyl, chloromethyl, phenyl, R_fS, R_fCH_2, chlorine and hydrogen, and

n is 0–2,

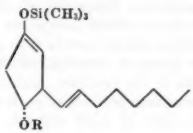
the remaining groups in the organosiloxane being siloxy groups containing only methyl, ethyl, or phenyl groups bonded to silicon.

3,847,962
PROSTAGLANDINS AND PROCESS AND INTERMEDIATES THEREFOR

John W. Patterson, Mountain View, and John H. Fried, Palo Alto, Calif., assignors to Syntex (U.S.A.) Inc.

No Drawing. Original application May 12, 1972, Ser. No. 252,721. Divided and this application Oct. 10, 1973, Ser. No. 404,857
Int. Cl. C07f *7/18*
U.S. Cl. 260—448.8 R **7 Claims**

1. The *dl* compounds of the formula:



wherein R is $—CH_2CH_2Cl$ or $—C(CH_3)_2O(CH_2)_xCH_3$ in which *x* is 0, 1, 2 or 3.

3,847,963
METHANATION PROCESSES

Jean-Marc Lalancette, Sherbrooke, Quebec, Canada, assignor to Ventron Corporation, Beverly, Mass.

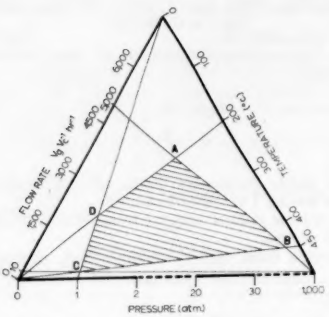
Filed Feb. 1, 1973, Ser. No. 328,723
Int. Cl. C07c *27/06*
U.S. Cl. 260—449 M **11 Claims**

1. A single stage process for producing methane substantially devoid of any carbon oxide from a gaseous mixture of hydrogen and at least one carbon oxide which comprises:

(a) heating said gaseous mixture to a temperature within the range of 200 to 450° C., and

(b) passing said gaseous mixture at a flow rate of from 10 to 500 $V_g\ V_c^{-1}$ $hr.^{-1}$ and under a pressure of as low as one atmosphere in contact with a catalyst composition consisting essentially of a transition metal catalyst intercalated within the crystals of a crystallized carbon graphite, the carbon atoms having a definite planar alignment and wherein the transition metal is in the metallic state having a zero valence,

and is selected from the group consisting of nickel, palladium and platinum,



thereby to produce methane gas substantially devoid of any carbon oxide.

3,847,964

MANUFACTURE OF PERFLUOROCARBOXYLIC ACID NITRILES

Eckhard Hetzel, Frankenthal, and Olaf Korpiun, Heidelberg, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Feb. 26, 1973, Ser. No. 335,818
Claims priority, application Germany, Feb. 25, 1972, P 22 08 923.2
Int. Cl. C07c *121/12*
U.S. Cl. 260—465.2 **5 Claims**

1. An improved process for the manufacture of perfluorocarboxylic acid nitriles by reacting perfluorocarbonamides with phosphorus pentoxide at elevated temperatures, the improvement which comprises reacting in a reaction zone a perfluorocarbonamide with phosphorus pentoxide in the gas phase at temperatures of from 450° to 600° C. at a ratio in the reaction mixture of 1–10 moles of phosphorus pentoxide per mol of perfluorocarbonamide with a residence time of 2–20 seconds in said reaction zone, and using nitrogen as an inert carrier gas for the perfluorocarbonamide and the phosphorus pentoxide.

3,847,965

PROCESS FOR PREPARING ACRYLONITRILE BY THE AMMOXIDATION OF PROPYLENE USING A METAL OXIDE COMPOSITION OF ANTIMONY-TIN-COPPER-IRON AND AN ADDITIONAL METAL

Edward James Gasson, Dollar, Stanley Frederic Marrian, Aberdour, and Thomas Charles Krosnar, Polmont, Scotland, assignors to BP Chemicals International Limited, London, England

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,999
Claims priority, application Great Britain, Mar. 17, 1972, 12,607/72
Int. Cl. C07c *121/02*
U.S. Cl. 260—465.3 **10 Claims**

1. A process for the production of acrylonitrile which comprises reacting at an elevated temperature in the vapor phase, propylene, molecular oxygen and ammonia over a catalyst which is an oxide composition essentially consisting of antimony, tin, copper, iron and an additional metal selected from the group consisting of beryllium, magnesium, calcium, zinc, strontium, cadmium, and barium, said catalyst having been heat treated, before use, at a temperature between 550° and 1100° C. in a molecular oxygen-containing gas.

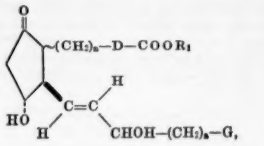
3,847,966

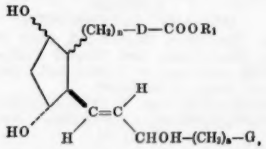
PROSTAGLANDIN E_1, F_1, AND A_1 ANALOGS

John E. Pike, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

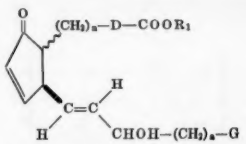
No Drawing. Continuation-in-part of application Ser. No. 168,455, Aug. 2, 1971, which is a division of application Ser. No. 748,158, July 29, 1968, both now abandoned. This application Jan. 16, 1973, Ser. No. 324,026
Int. Cl. C07c *61/32, 61/36, 69/74*
U.S. Cl. 260—468 D **17 Claims**

1. An optically active compound of the absolute configuration of natural PGE_1 or a racemic compound with the formula:

IV 

V 

or

VI 

wherein n is 1 to 6 and a is zero to 4; wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, cycloalkyl of 3 to 10 carbon atoms, inclusive, aralkyl of 7 to 12 carbon atoms, inclusive, phenyl, or phenyl substituted with one to 3 chloro or alkyl of one to 4 carbon atoms, inclusive; wherein D is ethylene substituted by one or 2 fluoro; wherein G is 3,3,difluorobutyl, 4,4-difluorobutyl, 4,4,4-trifluorobutyl, 3,3,4,4-tetrafluorobutyl, or 3,3,4,4,4-pentafluorobutyl; and wherein ~ indicates attachement of the group to the ring in alpha or beta configuration, and pharmacologically acceptable salts thereof when R_1 is hydrogen.

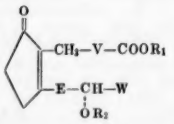
3,847,967

15-LOWER ALKOXY PGB COMPOUNDS

Frank H. Lincoln, Jr., 5235 Ridgebrook Drive, Portage, Mich. 49081, John E. Pike, 2312 Lorraine Ave., and Gilbert A. Youngdale, 1702 Greenbriar Drive, both of Kalamazoo, Mich. 49008

No Drawing. Original application May 4, 1971, Ser. No. 140,251, now abandoned. Divided and this application Jan. 26, 1973, Ser. No. 326,911
Int. Cl. C07c *61/36, 69/74*
U.S. Cl. 260—468 D **9 Claims**

1. An optically active compound of the formula



or a racemic compound of that formula and the mirror image thereof, wherein E is $-CH_2CH_2-$ or

trans-CH=CH—;

wherein R_1 is hydrogen, alkyl of one to 8 carbon atoms, inclusive, or a pharmacologically acceptable cation; wherein R_2 is alkyl of one to 5 carbon atoms, inclusive; wherein V is either $—(CH_2)_5—$ or cis-$CH=CH—(CH_2)_3—$, provided that E is $—CH_2CH_2—$ only when V is $—(CH_2)_5—$; and wherein W is 1-pentyl or cis 1-pent-2-enyl provided that W is cis 1-pent-2-enyl only when E is trans

$$—CH=CH—$$

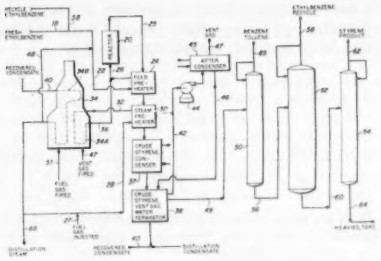
and V is $—CH=CH—(CH_2)_3—$.

3,847,968

METHOD OF PRODUCING STYRENE

Richard E. Hughes, Belmont, Mass., assignor to The Badger Company, Inc., Cambridge, Mass.

Filed July 30, 1973, Ser. No. 383,584
Int. Cl. C07c *5/18, 15/20*
U.S. Cl. 260—669 R **16 Claims**



1. In a process involving dehydrogenation of ethylbenzene in the presence of steam in a dehydrogenation reactor at elevated temperature to produce styrene, the improvement comprising introducing a quantity of combustible fuel gas at an elevated temperature into the dehydrogenation reactor as a heat source, and thereby reducing the steam requirements of said process.

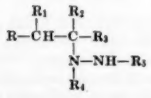
3,847,969

DIASTEREOMERS OF ESTERS AND SALTS OF α-HYDRAZINO-β-(PHENYL)PROPIONIC ACID

Sandor Karady, Elizabeth, Seemon H. Pines, Murray Hill, Manuel G. Ly, Edison, and Meyer Sletzinger, North Plainfield, N.J., assignors to Merck & Co. Inc., Rahway, N.J.

No Drawing. Original application June 24, 1970, Ser. No. 49,542, now Patent No. 3,718,678. Divided and this application Nov. 15, 1971, Ser. No. 199,060
Int. Cl. C07c *109/10*
U.S. Cl. 260—471 A **3 Claims**

1. A diastereomer of a compound of the formula



wherein

R is a 3,4-disubstituted phenyl radical wherein the substituents are acetoxy;

R_1 and R_2 are hydrogen or lower alkyl;

R_3 is —COOlower alkyl or —COOcation; and

R_4 and R_5 are hydrogen, benzoyl or lower alkanoyl with at least one group being hydrogen with an optically active acid selected from the group consisting of camphoric acid, dibenzoyltartaric acid, ditolyltartaric acid, malic acid, α-methyl-α-phenylacetic acid, and atrolactic acid.

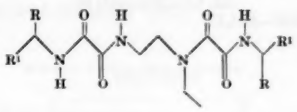
3,847,970

CERTAIN NON-TERPENOID JUVENILE HORMONE MIMICKING COMPOUNDS

Ferenc Marcus Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

No Drawing. Filed Jan. 28, 1974, Ser. No. 437,128
Int. Cl. C07c *101/26, 103/14*
U.S. Cl. 260—482 P **5 Claims**

1. A compound of the formula



in which R is alkyl having 1 to 4 carbon atoms and R^1 is alkyl having 1 to 4 carbon atoms with the proviso that R and R^1 taken together have no more than 6 carbon atoms.

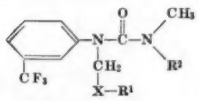
3,847,971

SUBSTITUTED m-TRIFLUOROMETHYLPHENYLUREA DERIVATIVES

Karl-Heinz Koenig, Frankenthal, Rudolf Kolbinger, Speyer, and Adolph Fischer, Mutterstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Jan. 5, 1972, Ser. No. 215,664
Claims priority, application Germany, Jan. 15, 1971, P 21 01 698.8
Int. Cl. C07c *127/20, 127/22, 153/07*
U.S. Cl. 260—490 **2 Claims**

1. A substituted m-trifluoromethylphenylurea derivative of the formula



where R^1 denotes the radical

R^3 denotes lower alkyl, phenyl or benzyl, X denotes oxygen, and R^2 denotes alkyl of 1 to 3 carbon atoms, methoxy or hydrogen.

3,847,972

PRODUCTION OF VINYL ACETATE

Naoya Kominami, Tokyo, Hitoshi Nakajima, Ageo, Nobuhiro Tamura, Tokyo, and Kusuo Ohki, Yamatomachi, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

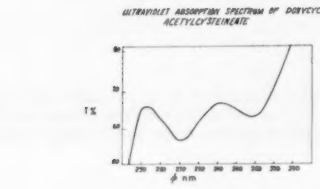
Continuation-in-part of application Ser. No. 733,284, May 31, 1968. This application June 17, 1971, Ser. No. 154,009
Claims priority, application Japan, June 12, 1967, 42/37,112
Int. Cl. C07c *67/04*
U.S. Cl. 260—497 A **4 Claims**

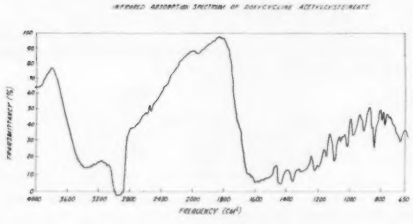
1. In a process for producing vinyl acetate wherein a gas mixture containing ethylene, acetic acid, and molecular oxygen is reacted in a catalytic gas phase reaction at a temperature of 50° to 300° C. in the presence of a catalyst composition consisting essentially of metallic palladium used together with copper, and supported on an inert carrier, said composition containing potassium bromide in a ratio of 0.1–100:1 based on the amount of palladium, whereby the catalyst life is increased and the catalyst is more easily regenerated for reuse.

3,847,973
DOXYCYCLINE ACETYLCYSTEINEATE

Luis Socias Vinals, Bilbao, Jose Rodriguez Blanco, Las Arenas, and Francisco Javier Ugalde Fernandez, Bilboa, Spain, assignors to Fabrica Espanola de Productos Quimicos y Farmaceuticos S.A., Lamiaco (Province of Vizcaya), Spain

Filed May 30, 1972, Ser. No. 258,082
Claims priority, application Spain, June 11, 1971, 392,136
Int. Cl. C07c *103/19*
U.S. Cl. 260—501.12 **1 Claim**


ULTRAVIOLET ABSORPTION SPECTRUM OF DOXYCYCLINE ACETYLCYSTEINEATE
T%
λ nm
CONCENTRATION: 0.01 g/l. IN DISTILLED WATER.
POSITION OF THE MAXIMUMS:
275 nm E 1% 1 cm = 250
350 nm E 1% 1 cm = 197



1. Doxycycline acetylcysteinate.

3,847,974
CONTINUOUS PRODUCTION OF ANTHRANILIC ACID

Hans-Juergen Sturm, Gruenstadt, Fritz Erdmann Kempter, Frankenthal, and Herbert Armbrust, Gruenstadt, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

No Drawing. Filed Oct. 6, 1970, Ser. No. 78,622
Int. Cl. C07c *101/54*
U.S. Cl. 260—518 R **9 Claims**

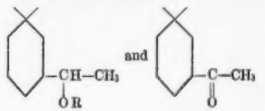
1. A process for the continuous production of anthranilic acid which comprises reacting a starting compound selected from the group consisting of the alkali metal salts of phthalamic acid and phthalimic acid in an aqueous medium in a plurality of stages, the first reaction stages for converting the starting compound into the alkali metal salt of phenyl isocyanate-2-carboxylic acid being carried out under substantially adiabatic conditions while substantially avoiding any backmixing, the resulting reaction mixture being immmediately withdrawn from the reaction zone of said first stages and then supplied substantially without backmixing to the reaction zone of at least one subsequent stage for hydrolysis and decarboxylation of said phenyl isocyanate-2-carboxylic acid into anthranilic acid, a reducing agent selected from the group consisting of sodium borohydride, lithium triethoxy aluminum hydride, sodium sulfide, sodium hydrogen sulfide, ammonium sulfide, sulfurous acid, sulfur dioxide, sodium dithionite, sodium thiosulfate, sodium formaldehyde sulfoxylate, thiourea dioxide, hydrazine and its salts, glucose, sodium sulfite and sodium bisulfite being added to the reaction mixture withdrawn from the reaction zone of said first stages and before the reaction has been completed.

3,847,975
PERFUME COMPOSITIONS CONTAINING SUBSTITUTED CYCLOHEXANE COMPOUNDS

John B. Hall, Rumson, N.J., assignor to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Continuation-in-part of abandoned application Ser. No. 862,023, Sept. 29, 1969, which is a division of application Ser. No. 573,882, Aug. 22, 1966, now Patent No. 3,487,102. This application Aug. 16, 1971, Ser. No. 172,252
Int. Cl. C11b *9/00*
U.S. Cl. 252—522 **5 Claims**

1. A perfume composition comprising a fragrance imparting amount of a compound selected from the group consisting of compounds having the formulas



I. II.

where R is an acyl group containing no more than 4 carbon atoms as an active fragrance ingredient and an auxiliary perfume adjuvant.

3,847,976
YIELD OF TRIMELLITIC ACID IMPROVED BY PHTHALIC ANHYDRIDES OR ITS PRECURSORS

George E. Kuhlmann, Downers Grove, Ill., assignor to Standard Oil Company, Chicago, Ill.

No Drawing. Filed Dec. 20, 1972, Ser. No. 316,859
Int. Cl. C07c *51/20, 63/32, 63/02*
U.S. Cl. 260—524 R **3 Claims**

1. A method of improving trimellitic acid yield by air oxidation of pseudocumene in the presence of a liquid phase acetic acid solution of heavy metal oxidation catalyst and bromine, which method consists essentially of conducting such oxidation also in the presence of oxidation promoting amounts of phthalic anhydride, o-phthalic acid or o-xylene.

3,847,977
PURIFICATION PROCESS FOR AROMATIC ACIDS

Richard V. Norton, Wilmington, Del., assignor to Sun Research and Development Co., Philadelphia, Pa.

No Drawing. Filed June 19, 1972, Ser. No. 263,809
Int. Cl. C07c *51/42, 63/36, 63/38*
U.S. Cl. 260—525 **12 Claims**

1. A process for purification of an aromatic acid containing color and nitrogen impurities selected from the group of poly acids of the benzene series and mono- and poly acids of the naphthalene series and obtained by the hydrolysis of nitriles, which comprises extracting said impure acid with a three phase heterogeneous system consisting essentially of an aqueous solution of acetic acid, a liquid aromatic hydrocarbon having from six to nine carbon atoms, and aromatic acid; the aqueous acetic acid solution containing from about 40% to about 65% by weight of water, the weight ratio of aqueous extractant solution to aromatic hydrocarbon being from about 3.75:1 to about 20:1, from about 15% to about 90% by weight of the aromatic acid being in the solid phase, and said extraction being made to occur in a closed system at a temperature of between about 200° and about 250° C.

3,847,978

PERFLUORINATED LINEAR POLYETHERS HAVING REACTIVE TERMINAL GROUPS AT BOTH ENDS OF THE CHAIN AND PROCESS FOR THE PREPARATION THEREOF

Dario Sianesi and Gerardo Caporiccio, Milan, and Domenico Mensi, Breno, Italy, assignors to Montecatini Edison S.p.A., Milan, Italy

No Drawing. Continuation-in-part of abandoned application Ser. No. 787,309, Dec. 26, 1968. This application June 18, 1969, Ser. No. 834,486

Claims priority, application Italy, July 1, 1968, 817,809/68

Int. Cl. C07c *59/22*

U.S. Cl. 260—535 H **25 Claims**

1. Bifunctional perfluorinated polyethers and mixtures thereof, having chemically reactive terminal groups at both ends of the chain, said polyethers having from 1 to 100 repeating units selected from the group consisting of —C_3F_6O—, —C_2F_4O—, and —CF_2O—, wherein C_3F_6 and C_2F_4 are perfluoroalkylene units derived from the opening of the double bond of a hexafluoropropylene and of a tetrafluoroethylene molecule, respectively, the different oxyperfluoroalkylene units having a random distribution along the chain, there being no more than 50 of any one of said species of repeating units, said —CF_2O— repeating units being present only when either or both of said —C_2F_4O— and C_3F_6O— repeating units are present, said —C_2F_4O —units being present only when said —CF_2O— units are also present, said C_3F_6O— units being present only when either said —CF_2O— units are also present or when said polyether contains a

$$—CF_2—CO—CF_3$$

terminal group bonded to said chain through an ether oxygen, said polyether having terminal groups bonded to said chain through an ether oxygen, said terminal groups being selected from the group consisting of

$$—CF_2COOH, —\underset{\displaystyle CF_3}{\overset{\displaystyle |}{C}}—CFCOOH, \text{ and } —CF_2—CO—CF_3,$$

and —CF_2—CO—CF_3

at least one of the latter two terminal groups being present when —C_6F_6O— repeating units are present, with the further proviso that when said —CF_2CO—CF_3 terminal group is present, one of said other two terminal groups is also present, and the corresponding acyl halides, lower alkyl esters and metal salts.

3,847,979

ADDITION OF SULFUR TO ALKYLDIHALOGENPHOSPHINE

James C. Richards, 160 Alpine Trail, Sparta, N.J. 07871, and Edward B. Trescott, 5407 Forge Road, Whitemarsh, Md. 21162

No Drawing. Continuation-in-part of application Ser. No. 8,694, Feb. 4, 1970. This application Aug. 18, 1972, Ser. No. 281,679

Int. Cl. C07f *9/42*

U.S. Cl. 260—543 P **3 Claims**

1. A method for the addition to sulfur to methyl dichlorophosphine comprising the steps of:

reacting methyl dichlorophosphine with a recycled hydrolized reactant product,

$$CH_3\overset{\displaystyle S}{\overset{\displaystyle \|}{P}}(SH)_2,$$

in the presence of phosphorous trichloride,

continuously introducing chlorine gas during said reaction,

maintaining said reaction under reflux condition of said phosphorous trichloride to produce methyl dichlorophosphine sulfide and hydrchloric acid,

reacting a portion of said methyl dichlorophosphine sulfide with a gaseous hydrogen sulfide in the presence of a hexane of methylene chloride to produce said hydrolized reactant product,

$$CH_3\overset{\displaystyle S}{\overset{\displaystyle \|}{P}}(SH)_2,$$

and hydrochloric acid,

separating said hydrochloric acid, and

recycling said hydrolized reactant product for reaction with said methyl dichlorophosphine in accordance with the first step of the method.

3,847,980

PHOSPHORYLATED THIOUREA COMPOSITIONS

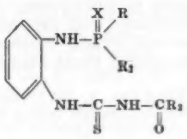
Alexander Mihailovski, Berkeley, and Don R. Baker, Orinda, Calif., assignors to Stauffer Chemical Company, New York, N.Y.

No Drawing. Original application Dec. 29, 1971, Ser. No. 213,714, now Patent No. 3,767,734. Divided and this application Feb. 26, 1973, Ser. No. 336,110

Int. Cl. C07c *157/06*

U.S. Cl. 260—552 R **2 Claims**

1. Compounds corresponding to the generic formula:



wherein X is selected from the group consisting of oxygen and sulfur, R and R_1 are the same or different and are lower alkyl and R_2 is lower alkyl.

3,847,981

MONOALKYLATION OF UREA

David E. Morris, Kenmore, and Francis R. Smith, Buffalo, N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

No Drawing. Filed June 25, 1971, Ser. No. 157,053

Int. Cl. C07c *127/14*

U.S. Cl. 260—553 R **4 Claims**

1. In a process for the preparation of a N-t-alkyl urea by the reaction of a tertiary mono-olefin and urea in the presence of an acid catalyst, the improvement which consists essentially of:

(a) premixing said urea with about 1.2–2.0 moles of 70–90% sulfuric acid per mole of urea while maintaining the temperature below 70° C.; and

(b) contacting with agitation said urea-acid mixture with about 0.8–1.5 moles of said olefin per mole of urea at autogeneous pressure at a temperature of about 20°–50° C. for at least about two hours.

3,847,982
OXYGENATED N-BENZOYL-N,2,3,3-TETRAMETHYL-*EXO*-2-NORBORNANAMINES

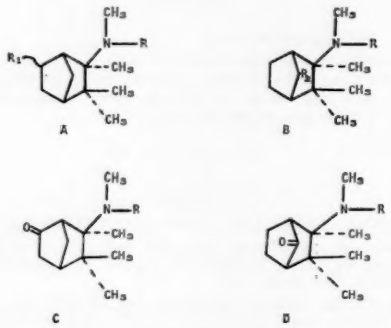
Milton E. Herr, Kalamazoo, Herbert C. Murphy, Hickory Corners, and Gunther S. Fonken, Charleston Township, Kalamazoo County, Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

No Drawing. Original application July 15, 1970, Ser. No. 55,272, now Patent No. 3,717,650. Divided and this application Nov. 24, 1972, Ser. No. 309,413

Int. Cl. C07c *103/22*

U.S. Cl. 260—558 R **12 Claims**

1. A compound of the formula A, B, C or D:



wherein R is benzoyl and R_1 and R_2 are each hydroxy or methoxy.

3,847,983
NAPHTHANILIDE DERIVATIVES AND PROCESS FOR PRODUCING THE SAME

Teruo Kobayashi and Taiichi Nishimura, Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

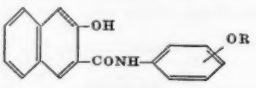
No Drawing. Filed Oct. 5, 1972, Ser. No. 295,328

Claims priority, application Japan, Oct. 8, 1971, 46/79,187

Int. Cl. C07c *103/26*

U.S. Cl. 260—560 **4 Claims**

1. A naphthanilide derivative of the formula:



wherein R represents a substituent selected from the group consisting of acetyl, propionoyl, benzenesulfonyl, benzyl and benzoyl groups, and p-toluenesulfonyl at the ortho or meta position.

3,847,984
PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL ALKYL AMINES

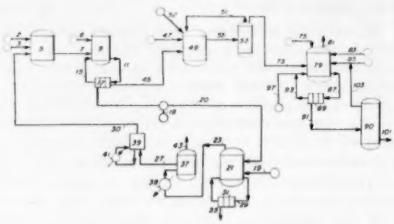
Jerome Linder and Lester L. Maravetz, Westfield, George N. Schmit, Scotch Plains, and Neil F. Newman, Matawan, N.J., assignors to Esso Research and Engineering Company

Original application Aug. 28, 1970, Ser. No. 67,809, now Patent No. 3,739,025. Divided and this application May 18, 1973, Ser. No. 361,728

Int. Cl. C07c *87/34*

U.S. Cl. 260—563 R **6 Claims**

1. A method for preparing either a cyclopropylmethyl alkyl amine or cyclopropylmethyl alkyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, said method comprising the steps of reacting either a cyclopropylmethyl amine or a cyclopropylmethyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, with either an aldehyde or ketone or alcohol in the presence of a base to form either an N-alkylidene cyclopropylmethyl amine or an N-alkylidene cyclopropylmethyl amine optionally substituted with a C_1–C_4 alkyl group on the cyclopropyl ring, said base being one selected from the group consisting of alkali and alkaline earth metal hydroxides; separating the hydroxide layer from an organic layer containing the said N-alkylidene cyclopropylmethyl amine; treating the said N-alkylidene cyclopropylmethyl amine with hydrogen in the presence of a catalyst at a temperature of from about 0° C. to the boiling point of the reaction mixture and a pressure of from about 1 to 300 atmospheres, said catalyst being one selected from the group consisting of rhodium supported on carbon, copper supported on a siliceous support, copper supported on alumina, and platinum supported on calcium carbonate.



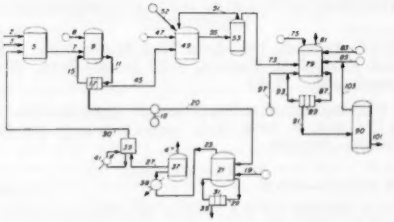
3,847,985
PROCESS FOR THE PREPARATION OF CYCLOPROPYLMETHYL ALKYL AMINES

Jerome Linder and Lester L. Maravetz, Westfield, George M. Schmit, Scotch Plains, and Neil F. Newman, Matawan, N.J., assignors to Esso Research and Engineering Company

Original application Aug. 28, 1970, Ser. No. 67,809, now Patent No. 3,739,025. Divided and this application May 18, 1973, Ser. No. 361,729

Int. Cl. C07c *87/34*

U.S. Cl. 260—563 R **2 Claims**



1. A method for preparing either cyclopropylmethyl alkyl amines or cyclopropylmethyl alkyl amines optionally substituted with a C_1–C_4 alkyl group on the cyclo-

propyl ring, said method comprising the steps of reacting either an allylic chloride or an allylic chloride optionally substituted with C_1–C_4 alkyl group with hydrogen bromide in the presence of a free radical catalyst thereby forming either anti-Markownikoff 1-bromo-3-chloropropane or 1-bromo-3-chloropropane optionally substituted with C_1–C_4 alkyl groups; contacting the said bromo-chloropropane with a metal cyanide to form either a gamma-chloronitrile or a gamma-chloronitrile optionally substituted with C_1–C_4 alkyl groups; reacting the said nitrile with alkali hydroxide to form either a cyclopropyl cyanide or a cyclopropyl cyanide optionally substituted with C_1–C_4 alkyl groups, hydrogenating said cyclopropyl cyanide in the presence of a metal hydrogenation catalyst at a temperature of from 0°–100° C. and a pressure of from 1 to 300 atmospheres; reacting said hydrogenated cyclopropyl cyanide with either a halide or a ketone to form either N-alkylidene cyclopropylmethyl amine or N-alkylidene cyclopropylmethyl amine optionally substituted with C_1–C_4 alkyl groups on the cyclopropyl ring, in the presence of a base, said base being one selected from the group consisting of alkali and alkaline earth metal hydroxides; separating the alkali metal hydroxide layer from an organic layer containing the said N-alkylidene cyclopropylmethyl amine; treating the said N-alkylidene cyclopropylmethylamine with hydrogen in the presence of a catalyst selected from the group consisting of rhodium supported on carbon, copper supported on silica, copper supported on alumina and platinum supported on calcium carbonate at a temperature ranging from 0° C. to the boiling point of the hydrogenation reaction mixture and at a pressure ranging from 1 to 300 atmospheres.

3,847,986

SUBSTITUTED PHENYLTHIOAMIDINES

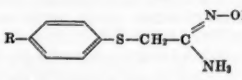
Earl R. Bockstahler, Indianapolis, Ind., assignor to The Dow Chemical Company, Midland, Mich.

No Drawing. Original application May 30, 1973, Ser. No. 257,940, now Patent No. 3,775,478. Divided and this application Sept. 27, 1973, Ser. No. 401,475

Int. Cl. C07c *123/00*

U.S. Cl. 260—564 G **2 Claims**

1. A substituted phenylthio amidine compound of the formula:



wherein R represents halo or a salt thereof with a pharmaceutically acceptable acid.

3,847,987

PHENYLHYDRAZONE DERIVATIVES

Roger Boesch, Vitry-sur-Seine, France, assignor to Rhone-Poulenc S.A., Paris, France

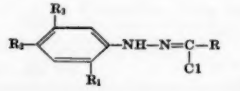
No Drawing. Filed May 24, 1973, Ser. No. 363,651

Claims priority, application France, May 26, 1972, 7218895; Mar. 19, 1973, 7309754

Int. Cl. C07c *109/14*

U.S. Cl. 260—506 B **10 Claims**

1. A phenylhydrazone derivative of the formula:



wherein R represents alkyl of 1 through 4 carbon atoms, and two of the symbols R_1, R_2 and R_3 represent halogen and the third represents halogen or nitro.

3,847,988

SUBSTITUTED IMIDATES

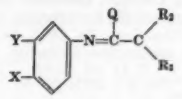
Elijah H. Gold, West Orange, N.J., assignor to Schering Corporation, Bloomfield, N.J.

No Drawing. Continuation-in-part of abandoned application Ser. No. 211,780, Dec. 23, 1971. This application June 20, 1973, Ser. No. 371,800

Int. Cl. C07c *119/00*

U.S. Cl. 260—566 D **4 Claims**

1. A compound of the formula:



wherein Q is chloro or bromo, R_2 and R_3 each are straight or branched chain alkyl radicals having up to 5 carbon atoms or when taken together with the carbon atom to which they are attached are cycloalkyl having up to 5 carbon atoms, and X is a member of the group consisting of nitro, trifluoromethyl and halogen and Y is a member of the group consisting of hydrogen, halogen, nitro, lower alkyl, hydroxy, lower alkoxy, lower alkanoyloxy, lower alkanoyl, polyfluoroloweralkoxy, lower carbalkoxy, polyfluorolower alkyl, trifluoromethylthio, trifluoromethylsulfonyl and trifluoromethylsulfoxy.

3,847,989

EXOTHERMIC CATALYTIC HYDROGENATION OF ORGANIC COMPOUNDS IN A LIQUID REACTION MEDIUM

Rolf Platz, Mannheim, Otto Nagel, Hambach, and Werner Fuchs, Ludwigshafen, Germany, assignors to Badische Anilin- & Soda-Fabrik Aktiengesellschaft, Ludwigshafen (Rhine), Germany

Filed Sept. 17, 1969, Ser. No. 858,808

Claims priority, application Germany, Sept. 19, 1968, P 17 93 452.0

Int. Cl. C07b *1/00*

U.S. Cl. 260—570.9 **4 Claims**

1. A process for carrying out an exothermic catalytic hydrogenation with molecular hydrogen of a carbon-carbon triple or double bond, an aromatic ring, a carbonyl group, a nitro group, a nitrile group, an oxime group, an aminoxide group, an acid chloride group, a benzyl ester group, or a benzyl ether group of an organic compound in an exothermic reaction in a body of liquid having suspended or dissolved therein a solid, finely divided hydrogenation catalyst of a catalytic metal selected from the group consisting of platinum, palladium, rhodium, ruthenium, nickel and cobalt, which comprises withdrawing a portion of said liquid from said body, recycling the withdrawn portion by introducing the latter through a first nozzle into said body of liquid at a point below the surface of said body and into a small cylindrical tube immersed in said body and having an inlet, introducing hydrogen through another nozzle in said body of liquid and into said inlet opening, the recycled liquid having a velocity of 5–100 meters per second at its point of introduction into said body, the ratio of the volume of the recycled liquid to the volume of hydrogen introduced through their respective nozzles being from 1:5 to 1:01, the exothermic hydrogenation action occurring in said cylindrical tube as the hydrogen and liquid jet from the inlet opening of said tube and through said tube, inducing by the jetting action of said liquid in said body of liquid in said cylindrical tube a circulation of additional liquid drawn through said cylindrical tube in an amount of about 10 to 100 times the amount of the recycled liquid supplied through said first nozzle, said additional liquid so drawn dissipating immediately the heat of the exothermic hydrogenation action

in said cylindrical tube, and the inlet opening of said tube having a mean diameter of 2 to 20 times the mean diameter of said first nozzle and the cylindrical tube having a length of 3 to 30 times its hydraulic diameter.

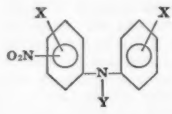
3,847,990

PROCESS FOR THE PRODUCTION OF NITRODIPHENYL AMINE DERIVATIVES

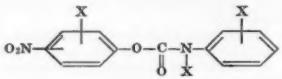
Johannes Blahak, Cologne, Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Sept. 26, 1972, Ser. No. 292,445
Claims priority, application Germany, Sept. 28, 1971, P 21 48 223.5
Int. Cl. C07c 87/60
U.S. Cl. 260—576 13 Claims

1. A process for the production of a nitrodiphenyl amine of the formula



wherein each X, which may be the same or different, is hydrogen, alkyl or cycloalkyl having up to 6 carbon atoms, halogen or nitro and Y is hydrogen or alkyl or cycloalkyl having up to 6 carbon atoms, wherein a urethane of the formula



wherein X and Y are as aforesaid, is decarboxylated by heating in the presence of a catalytic amount of a strong base selected from the group consisting of alkali metal salts or organic acids, alkali metal carbonates, alkali metal oxides and alkali metal hydroxides at a temperature of 110 to 250° C.

3,847,991

PROCESS FOR THE PREPARATION OF ETHAMBUTOL[2,2'-(ETHYLENE DIAMINO)-DI-BUTANE-1-OL]

Luigi Bernardi, Maurizio Foglio, and Aldemio Temperilli, Milan, Italy, assignors to Farmitalia Societa Farmaceutici Italia, Milan, Italy

No Drawing. Filed Dec. 26, 1972, Ser. No. 317,936
Claims priority, application Italy, Dec. 30, 1971, 33,117/71
Int. Cl. C07c 91/12
U.S. Cl. 260—584 R 6 Claims

1. A method for making ethambutol, (+)-2,2'-(ethylendiimino)-di-butan-1-ol, comprising reacting 1,2-epoxy-3-butene with phosgene at a temperature of from about —40° C. to room temperature to form 2-chloro-3-buten-1-ol chloroformate; reacting at a temperature not in excess of room temperature said chloroformate with a benzylamine of the formula $R—C_6H_4—CH_2—NH_2$, wherein R is H, methyl, halogen, nitro or amino, to form a 2-chloro-3-buten-1-ol N-benzylurethane; reacting said N-benzylurethane with an alkali hydroxide to form 2-benzylamino-3-buten-1-ol; resolving said 2-benzylamino-3-buten-1-ol into its optical antipodes; reacting the (+) form with a 1,2-dihalo-ethane or 1,2-ditosyloxy-ethane to form the product (+)-2,2'-(N,N'-di-benzyl-ethylendiimino) - di-3-buten-1-ol; and hydrogenating said product to form ethambutol.

3,847,992

PARTIALLY AMINATED POLYOXYALKYLENE POLYOLS

Philip Hotchkiss Moss, Austin, Tex., assignor to Jefferson Chemical Company, Inc., Houston, Tex.

No Drawing. Filed Mar. 12, 1973, Ser. No. 339,987
Int. Cl. C07c 89/00, 91/04
U.S. Cl. 260—584 B 6 Claims

1. A partially aminated polyoxyalkylene polyol having a functionality of from 2 to 8 and a hydroxyl number of about 20 to about 60 wherein the reactive groups of said partially aminated polyol comprise from about 15 percent to about 55 percent amine groups and from about 45 percent to about 85 percent primary hydroxyl groups.

3,847,993

ALLYLIC OXIDATION OF BICYCLIC HYDROCARBONS TO ALCOHOLS AND KETONES

John B. Hall, Rumson, and Lekhu Kewalram Lala, Edison, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

No Drawing. Filed June 21, 1971, Ser. No. 155,327
Int. Cl. C07c 45/02
U.S. Cl. 260—586 P 8 Claims

1. A process for allylic oxidation which comprises reacting a bicyclic compound having the formula:

wherein R_1, R_2, R_3, and R_4 are lower alkyl of one to three carbon atoms, X is $—CHR_5—$ or $—CHR_5—CHR_6—$, Y is $—CHR_7—$ or $—CHR_7—CHR_8—$, and R_5, R_6, R_7 and R_8 are hydrogen or lower alkyl of one to three carbon atoms, with oxygen in the presence of a metal organic catalyst which is an acetate, propionate, naphthenate or acetonyl acetonate of nickel, cobalt, copper or manganese at a temperature from 50° to 150° C. to provide a product, said product composed of a mixture of compounds having a carbonyl or carbinol group adjacent to the double bond on the Y-containing ring, and recovering the compounds.

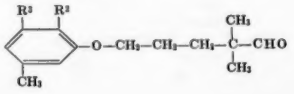
3,847,994

2,2-DIMETHYL-5-(ARYLOXY)-VALERALDEHYDES

Paul L. Creger and Winifred A. Neuklis, Ann Arbor, Mich., assignors to Parke, Davis & Company, Detroit, Mich.

No Drawing. Original application Mar. 30, 1970, Ser. No. 24,000, now Patent No. 3,707,566. Divided and this application Aug. 25, 1972, Ser. No. 283,864
Int. Cl. C07c 47/56
U.S. Cl. 260—600 3 Claims

1. A compound of the formula



where one of R^2 and R^3 is hydrogen; and the other of R^2 and R^3 is methyl.

3,847,995

PROCESS OF PURIFYING ALDEHYDES

Robert Winn Walker, Fort Washington, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

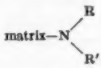
No Drawing. Original application Aug. 19, 1969, Ser. No. 851,456, now Patent No. 3,749,684. Divided and this application May 3, 1971, Ser. No. 139,906

Int. Cl. C07c *47/04, 47/12*

U.S. Cl. 260—601 R 2 Claims

1. A process for removing acidic compounds from an aqueous solution of an aldehyde selected from the group consisting of formaldehyde and glyoxal, which comprises contacting said solution with a resin having weak base anion exchange properties, said resin being a crosslinked ion exchange or adsorbent polymeric resin matrix having a plurality of functional groups selected from aliphatic or nonheterocyclic aromatic tertiary amine oxide groups and aliphatic or non-heterocyclic aromatic tertiary amine groups, wherein at least about 5% to 100% of said functional groups are tertiary amine oxide groups, said tertiary amine oxide groups having the formula

wherein R and R′ are the same or different alkyl, aryl, alkaryl, or aralkyl groups, or wherein R and R′ can be taken together to form a saturated heterocyclic ring with the attached nitrogen atom, or wherein R and R′ can be joined with an R or R′ in another tertiary amine oxide or tertiary amine group through an alkylene or alkyleneamino chain, and wherein said tertiary amine groups have the formula



wherein R and R′ are as defined above.

3,847,996

PROCESS FOR PREPARATION OF CARBONYL COMPOUNDS AND ISOBUTYLENE FROM OLEFINS AND T-BUTYL ALCOHOL

Frederick F. Caserio, Jr., Laguna Beach, and Glenn M. Nakaguchi, Fullerton, Calif., assignors to Atlantic Richfield Company, Philadelphia, Pa.

No Drawing. Continuation of abandoned application Ser. No. 708,774, Feb. 28, 1968. This application June 9, 1971, Ser. No. 151,528

Int. Cl. C07c *45/02*

U.S. Cl. 260—604 AC 4 Claims

1. The process for preparing alkanols and alkanones comprising reacting an olefin selected from the group consisting of ethylene propylene and butylene under effectively anhydrous conditions, and at temperature of 50°–150° C., with $PdCl_2$ and t-butyl alcohol to form alkanols, alkanones and isobutylene.

3,847,997

HYDROFORMYLATION PROCESS AND CATALYST

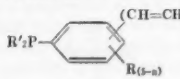
James D. Allen, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed June 12, 1969, Ser. No. 832,729

Int. Cl. C07c *45/08, 45/10*

U.S. Cl. 260—604 HF 12 Claims

1. In a hydroformylation process in which an olefin is reacted with carbon monoxide and hydrogen under hydroformylation conditions; the improvement which comprises carrying out the reaction under hydroformylation conditions in the presence of a catalyst produced by contacting a solid phosphorus-containing polymer of at least one phosphine of the formula



wherein each R is hydrogen or an alkyl group having 1 to 4 carbon atoms, the total number of carbon atoms in all of the R substituents being 12 or less, each R′ is a hydrocarbyl radical selected from alkyl, cycloalkyl, aryl and combinations thereof, said hydrocarbyl radical containing 1 to 20 carbon atoms, and n is 1 to 3, with at least one metal carbonyl of the group consisting of cobalt, rhodium, ruthenium, platinum and palladium, said metal being present in an amount in the range of 0.2 to 20 millimoles of metal per 5 grams of polymer support.

3,847,998

PREPARATION OF BERYLLIUM BIS(DIHYDROCARBYL BOROHYDRIDE)

Lawrence H. Shepherd, Jr., and Paul Kobetz, Baton Rouge, and Roy J. Laran, Greenwell Springs, La., and Robert W. Johnson, Jr., Savannah, Ga., assignors to Ethyl Corporation, New York, N.Y.

No Drawing. Original application Jan. 27, 1965, Ser. No. 430,237. Divided and this application Nov. 18, 1965, Ser. No. 537,576

Int. Cl. C07d *105/02*

U.S. Cl. 260—606.5 B 2 Claims

1. Process for the preparation of beryllium bis(dihydrocarbyl borohydride) of the general formula

$$Be(BR_2H_2)_2,$$

wherein R represents a radical selected from the group consisting of alkyl, monocyclic cycloalkyl and monocyclic aryl radicals containing from 1 to about 10, 5 to about 10 and 6 to about 10 carbon atoms, respectively, which comprises adding a dihydrocarbyl beryllium compound of the general formula R_2Be to a minor excess of a tetraorganodiborane of the general formula $R_4B_2H_2$, said addition being carried out at a temperature in the range of from about 0 to about 110° C., maintaining the reaction mixture at said temperature for a period ranging from less than 0.25 to more than 24 hours, sufficient to assure the substantial completion of the reaction and recovering the beryllium bis(dihydrocarbyl borohydride) from the reaction mixture.

3,847,999

PREPARATION OF TRIARYL PHOSPHINES

John Nicholson Gardner, Garrison, N.Y., and Josef Kochling, Upper Montclair, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

No Drawing. Filed Sept. 21, 1973, Ser. No. 399,597

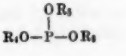
Int. Cl. C07f *9/50*

U.S. Cl. 260—606.5 P 9 Claims

1. A process for producing a phosphine of the formula:

wherein R_1, R_2 and R_3 are independently selected from the group consisting of lower alkyl, aryl or cyclo lower alkyl;

comprising reacting a phosphite of the formula:



wherein R_4, R_5 and R_6 are independently aryl;
with a phosphine oxide of the formula:

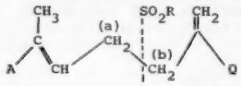
wherein R_1, R_2 and R_3 are as above;
at a temperature of at least 150° C. for a period of at least ½ hour.

3,848,000
METHYLENE-SULPHONES FROM THE TERPENE SERIES

Pierre Chabardes, Lyon, Marc Julia, Paris, and Albert Menet, La Mulatiere, France, assignors to Rhone-Poulenc S.A., Paris, France

No Drawing. Filed Feb. 1, 1973, Ser. No. 328,612
Claims priority, application France, Feb. 4, 1972, 7203805; Apr. 10, 1972, 7212479; Oct. 6, 1972, 7235485
Int. Cl. C07c *147/04*
U.S. Cl. 260—607 A **12 Claims**

1. A sulphone corresponding to the general formula:



(I)

in which

the sulphonyl group replaces the hydrogen atom on carbon atom (*a*) or (*b*),
R represents an alkyl, alkyl-phenyl or phenyl radical wherein the alkyl has from 1 to 4 carbon atoms;
Q represents hydrogen, methyl or vinyl;
A represents
(a) a hydrocarbon radical containing $5n+1$ carbon atoms (n being an integer of 1 to 8),
(b) a methyl radical, which is unsubstituted or substituted by a halogen atom or a sulphide or sulphone group, or
(c) a primary alcohol group —CH_2OH.

3,848,001
PURIFICATION OF BETA-NAPHTHOL BY EXTRACTIVE CRYSTALLIZATION

John Peter Dundon, Branchburg Township, N.J., assignor to American Cyanamid Company, Stamford, Conn.

No Drawing. Filed Dec. 21, 1972, Ser. No. 317,463
Int. Cl. C07c *37/28*
U.S. Cl. 260—621 B **2 Claims**

1. A method of treating beta-naphthol to separate therefrom alpha-naphthol, present in an amount of from about 1 to about 3 percent therein, comprising (1) forming a mixture of the beta-naphthol, in molten form, and water at a temperature above 90° C., (2) cooling the mixture, with continuous stirring, over the range of from about 90° C. to about 80° C. and over a period of at least about 30 seconds to effect crystallization of the beta-naphthol and extraction of alpha-naphthol into the water, and (3) filtered off the beta-naphthol crystals.

3,848,002
PROCESS FOR THE PRODUCTION OF P-NITROPHENOLS

Jon Weis and Bjarne Skinhøj Pedersen, Harboør, Denmark, assignors to A/S Cheminova, Lemvig, Denmark

No Drawing. Filed Aug. 2, 1972, Ser. No. 277,215
Claims priority, application Denmark, Aug. 12, 1971, 3,941/71
Int. Cl. C07c *79/24*
U.S. Cl. 260—622 R **22 Claims**

1. A process for the production of p-nitrophenols which comprises
(a) mixing (1) a nitrite of the formula R.O.NO, in which R is an alkyl group having 1–6 carbon atoms with (2) phenols selected from the group consisting essentially of phenol, m-cresol and a mixture of m- and p-cresol in an acidic aqueous medium which is an aqueous solution of a strong acid at temperatures ranging from —20° to 20° C. to form a precursor p-nitrosophenol; and
(b) treating the p-nitrosophenol with nitric acid in the presence of an alcohol of the formula R^1OH, in which R^1 is an alkyl group having 1–6 carbon atoms, at temperatures ranging from about —10° to 25° C.; and
(c) recovering a p-nitro-phenol.

3,848,003
HYDROGENOLYSIS OF CARBOXYLIC ACIDS WITH COBALT CATALYSTS

Frank G. Mesich, John A. Bedford, and Edward F. Dougherty, Corpus Christi, Tex., assignors to Celanese Corporation, New York, N.Y.

No Drawing. Continuation of abandoned application Ser. No. 50,312, June 26, 1970. This application June 8, 1973, Ser. No. 368,407
Int. Cl. C07c *31/02, 31/20*
U.S. Cl. 260—635 D **6 Claims**

1. In a process for effecting the hydrogenolysis of a carboxy-substituted feedstock consisting essentially of at least one member selected from the group consisting of carboxyalkanes, hydroxycarboxyalkanes, dicarboxyalkanes, and epsilon-caprolactone to a corresponding hydroxymethyl-substituted derivative of said feedstock by continuously passing hydrogen, along with said feedstock in a liquid reaction medium consisting essentially of said feedstock and water through a reaction vessel maintained under a hydrogen pressure of at least about 225 atmosphere absolute and at a temperature of about 180° C. to about 300° C. and containing a solid catalyst the surface of which consists essentially of catalytically active metallic cobalt, the improvement which comprises:
maintaining the activity of said catalyst and also maintaining a cobalt coating on those internal surfaces of said vessel which are normally wetted by said liquid reaction medium during the course of said hydrogenolysis by introducing into said reaction vessel, along with said feedstock and reaction medium, an aqueous solution containing a cobalt salt of a lower carboxylic acid whereby said cobalt salt is reduced and metallic cobalt is deposited on the internal surfaces of the reactor and on the catalysts.

3,848,004
STABILIZED 1,1,1-TRICHLOROETHANE COMPOSITION

Seiichi Katsuragawa, Saitama-ken, and Teruo Fujinaga, Yokohama, Japan, assignors to Central Glass Co., Ltd., Yamaguchi-ken, Japan

No Drawing. Filed Dec. 21, 1971, Ser. No. 210,542
Claims priority, application Japan, Dec. 26, 1970, 45/118,604
Int. Cl. C07c *17/42*
U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized composition consisting essentially of 1,1,1-trichloroethane and, as a stabilizer therefore, 0.1–5.0 weight percent of 1,4-dioxane, 0.01–1.0 weight percent of acrylonitrile, 0.05–3.0 weight percent of ethyl acetate and 0.1–3.0 weight percent of nitromethane.

3,848,005
INHIBITION OF IRON-CATALYZED DEHYDROCHLORINATION OF ALKYL CHLORIDES

Henry W. Sullivan, Houston, Tex., assignor to Shell Oil Company

No Drawing. Filed Nov. 15, 1972, Ser. No. 306,964
Int. Cl. C07c *17/40, 17/42*
U.S. Cl. 260—652.5 R **2 Claims**

1. A stabilized composition to inhibit the dehydrochlorination of alkyl chlorides of 3 to 20 carbon atoms

at a temperature ranging from about 100° C. to about 250° C., catalyzed by the presence of small quantities of ferric ion, consisting essentially of alkyl chlorides of 3 to 20 carbon atoms, ferric ions and a lower alkanol solution, wherein the lower alkanol is selected from the class consisting of methanol, ethanol, propanol or isopropanol, of a partial amide of derivatives of ethylene diamine tetraacetic acid, said partial amide formed by the reaction of one mole of ethylene diamine tetraacetic acid with at least two moles of a lower alkyl amine of the formula

wherein R^1 represents methyl, ethyl, propyl, isopropyl or butyl and R^2 is hydrogen or any of the moieties described for R^1 in a lower alkanol solvent selected from the class consisting of methanol, ethanol, propanol or isopropanol at a temperature of about 50° C. to about 200° C. wherein said partial amide is present in a molar quantity which is equal to the moles of ferric ion present and wherein the lower alkanol solution of the partial amide of ethylene diamine tetraacetic acid contains from about 25% by weight to about 75% by weight lower alkanol solvent based on the total weight of solution.

3,848,006

PARAFFIN HALOGENATION PROCESS

Allen K. Sparks, Des Plaines, Ill., assignor to Universal Oil Products Company, Des Plaines, Ill.

No Drawing. Continuation-in-part of application Ser. No. 803,057, Feb. 27, 1969. This application June 21, 1972, Ser. No. 265,092

Int. Cl. C07c *17/00*

U.S. Cl. 260—660 **4 Claims**

1. In a process for the thermal halogenation of a feed stock containing a C_6–C_{18} n-paraffin by reaction of said feed stock in liquid phase with chlorine or bromine, wherein carbonyl- and hydroxyl-containing hydrocarbonaceous compounds formed by air oxidation of said paraffin are present in said feed stock in concentrations of about 0.001 to 1.0 wt. percent, the improvement which comprises removing from said feed stock, prior to said thermal halogenation, at least a portion of said carbonyl- and hydroxyl-containing compounds by contact of the feed stock with a solid sorbent of dehydrated silica gel or activated alumina capable of selectively sorbing said compounds from the feed stock, whereby to increase the rate of halogenation of said n-paraffin.

3,848,007

PRODUCTION OF METHYLENE CHLORIDE

Luigi Forlano, Ferrara, Italy, assignor to Solvay & Cie, Brussels, Belgium

Filed Mar. 10, 1971, Ser. No. 122,903

Claims priority, application Belgium, Mar. 12, 1970, 86,301

Int. Cl. C07c *17/10*

U.S. Cl. 260—662 R **9 Claims**

1. A process for producing methylene chloride comprising the steps of

(a) chlorinating methane at a temperature between 200 and 500° C., the molar ratio of chlorine to methane to be chlorinated being between 0.2 and 0.4;

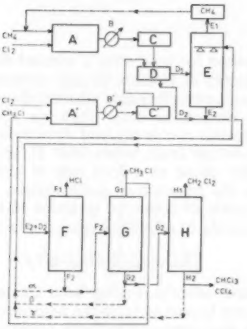
(b) partially condensing the products of step (a) at a temperature between −15 and −50° C. and pressure of up to 15 atmospheres to form a gas phase containing methane, hydrogen chloride and a minor proportion of chlorinated methanes and a liquid phase comprising chlorinated methanes and hydrogen chloride;

(c) absorbing hydrogen chloride from said gas phase obtained in step (b) by washing at a temperature between −10 and −50° C. and a pressure of up to 15 atmospheres with a liquid mixture of chlorinated methanes in a proportion of 3 to 6 moles of chlorinated methane per mole of hydrogen chloride present in the products of chlorinating step (a) to give a liquid phase enriched in hydrogen chloride and a gas phase containing methane;

(d) recycling said gas phase from step (c) to chlorinating step (a);

(e) combining said liquid phase from step (b) with said liquid phase resulting from step (c) to give a liquid mixture;

(f) separating the liquid mixture from step (e) in a hydrogen chloride distillation column to give dry gaseous hydrogen chloride as an overhead fraction and a liquid mixture of chlorinated methanes as a bottom fraction;



(g) using part of said liquid bottom fraction from step (f) as the liquid mixture of chlorinated methanes in absorbing step (c);

(h) distilling the other part of said liquid bottom fraction from step (f) to separate a liquid mixture of chlorinated methanes comprising methylene chloride, chloroform and tetrachloromethane as a bottom fraction and to separate the methyl chloride as an overhead fraction; and

(i) distilling said liquid mixture from step (h) to recover methylene chloride therefrom.

3,848,008

DILITHIUM INITIATORS FROM CERTAIN CONJUGATED DIENES YIELDING DELOCALIZED CHAIN ENDS

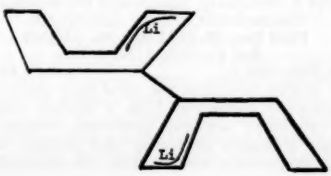
Lewis J. Fetters, Akron, Ohio, assignor to First National City Bank, New York, N.Y.

No Drawing. Filed Nov. 26, 1971, Ser. No. 202,662

Int. Cl. C07f *1/02*

U.S. Cl. 260—665 R **6 Claims**

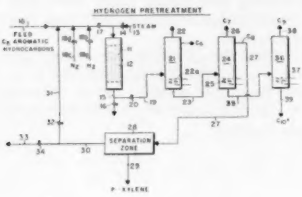
1. A dialkali metal adduct (dimer) of 1,3-cyclooctadiene having the formula



3,848,009
ISOMERIZATION OF POLYMETHYLBENZENES

Edward F. Wadley and Robert D. Wesselhoft, Baytown, Tex., assignors to Esso Research and Engineering Company

Filed Dec. 16, 1970, Ser. No. 98,524
Int. Cl. C07c 5/24, 15/08
U.S. Cl. 260—668 A 16 Claims



1. A method for producing a selected dimethylbenzene from a mixture of isomers of said selected dimethylbenzene containing ethylbenzene wherein the ratio of dimethylbenzene isomers is other than an equilibrium ratio which comprises contacting said dimethylbenzene mixture at a temperature from about 700° F. to about 950° F. in the vapor phase at a feed rate of about 1.0 to 10.0 v./v./hour the presence of the hydrogen at a hydrogen-to-oil mol ratio of about 6.0 to about 10 to 1 with a molybdenum oxide of offretite having the formula

$$(KCa(Al_3Si_3O_{18})\cdot 6H_2O)$$

catalyst, said offretite having been treated with ammonium salt and heated to form the hydrogen form followed by cooling and impregnation with ammonium molybdate to form on drying said molybdenum oxide on offretite catalyst, to form an isomerized product containing ethylbenzene and recovering said selected dimethylbenzene from said isomerized product.

3,848,010
CATALYTIC VINYLATION OF AROMATIC COMPOUNDS

George M. Intille, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Aug. 1, 1972, Ser. No. 277,003
Int. Cl. C07c 3/52, 15/10, 15/14
U.S. Cl. 260—668 R 6 Claims

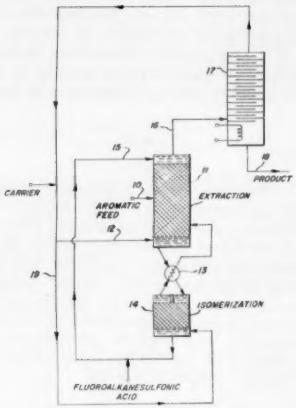
1. A process for coupling an aromatic compound having a maximum of one alkyl or alkenyl group having up to two carbon atoms attached to the aromatic ring with an olefinic compound having a maximum of one alkyl group having up to two carbon atoms attached to one of the doubly bonded carbon atoms comprising reacting said compounds with oxygen in the presence of a catalyst system comprising a mercury, thallium or lead salt, a Group VIII metal salt and a redox agent.

3,848,011
SEPARATION AND ISOMERIZATION OF ALKYL-SUBSTITUTED AROMATIC COMPOUNDS USING FLUOROALKANESULFONIC ACIDS

David A. McCaulay, Homewood, Ill., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 29, 1972, Ser. No. 319,549
Int. Cl. C07c 5/24, 7/10
U.S. Cl. 260—668 A 10 Claims

1. A process to extract the most basic methyl-substituted aromatic compound from a mixture comprising methyl-substituted aromatic compound isomers which comprises intimately contacting said mixture at about ambient temperature with at least one fluoroalkanesulfonic acid of formula RCF_2SO_3H wherein R=Cl, F, CF_3, CF_2Cl, C_2F_5, CF_2CFCl, C_3F_7, or C_4F_9 and subsequently separating said acid from said mixture, said mixture after



said contacting containing proportionately less of said most basic compound than said mixture prior to said contacting.

3,848,012
ALKYLATION PROCESS

Fred Applegath, Texas City, Louis E. Du Pree, Jr., Hitchcock, Alistair C. MacFarlane, Texas City, and Jacques D. Robinson, Alvin, Tex., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 26, 1973, Ser. No. 400,999
Int. Cl. C07c 3/56, 3/62
U.S. Cl. 260—671 R 8 Claims

1. A continuous process for the production of ethylbenzene which comprises simultaneously introducing benzene, ethylene and $AlCl_3$ catalyst into a first reaction zone maintained at a temperature from 140 to 200° C. and a pressure sufficient to maintain the reactants substantially in the liquid phase wherein the residence time is at least 15 minutes, the amount of $AlCl_3$ being in the range from about 0.0010 to about 0.0025 mole per mole of ethylene, the ethylene being added at a rate from about 300 to about 1500 moles per hour per mole of accumulated $AlCl_3$, and the *E/B* ratio being in the range from 0.3 to 0.9, continuously removing the reaction product from said first reaction zone and introducing it into a second reaction zone, maintaining it therein for a period of at least 15 minutes at a temperature from about 140° to about 200° C., continuously removing the reaction product from said second reaction zone, and recovering ethylbenzene therefrom.

3,848,013
METHOD FOR PRODUCING BENZENE, TOLUENE AND POLYMETHYL BENZENES

Naoya Kominami and Kiyoshi Kitamura, Tokyo, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

No Drawing. Continuation-in-part of application Ser. No. 222,382, Jan. 31, 1971, which is a continuation of application Ser. No. 63,318, Aug. 12, 1970, both now abandoned. This application Aug. 24, 1972, Ser. No. 283,561
Claims priority, application Japan, Aug. 14, 1969, 44/63,852; Aug. 25, 1969, 44/66,502
Int. Cl. C07c 3/58
U.S. Cl. 260—672 R 6 Claims

1. A method for producing benzene, toluene and polymethyl benzenes which comprises contacting a feed stock

comprising mainly aromatic hydrocarbons having at least 9 carbon atoms and at least one nuclear substituent containing at least two carbons atoms in the vapor phase at an elevated temperature with a catalyst comprising magnesium silicofluoride treated active alumina containing from about 0.01% to 10% fluorine and from about 0.01% to 10% magnesium by weight based on the total weight.

3,848,014

CATALYTIC STEAM DEALKYLATION

Masao Uchiyama and Shoichiro Mori, Ami, Japan, assignors to Mitsubishi Petrochemical Company Limited, Tokyo-to, Japan

No Drawing. Filed Dec. 19, 1972, Ser. No. 316,503
Claims priority, application Japan, Dec. 29, 1971, 47/3,446; Sept. 22, 1972, 47/95,339
Int. Cl. C07c *3/58*
U.S. Cl. 260—672 R **6 Claims**

1. A process for catalytic steam dealkylation of alkyl aromatic hydrocarbon which comprises causing an alkyl aromatic hydrocarbon to contact, in the presence of steam, a catalyst supported by a carrier, said catalyst comprising rhodium in a quantity of from 0.05 to 5.0 percent by weight with respect to the carrier and at least one oxide of a Group III*b* metal of the Periodic Table in a quantity of from 0.05 to 20 percent by weight with respect to the carrier.

3,848,015

PROCESS FOR THE PRODUCTION OF DIMERS AND TRIMERS OF CONJUGATED DIENES

Gunther Wilke and Ernst Willi Muller, both of Kaiser-Wilhelm-Platz 1, Mulheim (Ruhr), Germany

No Drawing. Continuation of abandoned application Ser. No. 128,601, Dec. 17, 1970, which is a division of application Ser. No. 532,900, Mar. 9, 1966, which is a continuation-in-part of applications Ser. No. 76,520, Dec. 19, 1960, Ser. No. 104,221, Apr. 20, 1961, and Ser. No. 203,753, June 20, 1962, and a continuation-in-part of application Ser. No. 555,203, June 3, 1966, which in turn is a continuation of application Ser. No. 203,753, June 20, 1962, all now abandoned. This application June 25, 1973, Ser. No. 373,525
Claims priority, application Germany, Dec. 22, 1959, St 15,930; Apr. 28, 1960, St 16,427; June 30, 1961, St 18,017
Int. Cl. C07c *11/00*
U.S. Cl. 260—677 R **2 Claims**

1. 5-methyl-heptatri-1,3,6-ene.

3,848,016

PRODUCTION OF CRACKED GASES FROM LIQUID HYDROCARBON

Hisashi Kono, Kenji Terai, Takazumi Niwa, Masahiko Kitajima, Morihiko Sawada, Kohei Ninomiya, and Shigeyuki Nakai, Ube, Japan, assignors to Ube Industries, Ltd., Ube-shi, Yamaguchi-ken, Japan

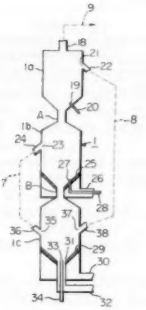
Filed Mar. 16, 1973, Ser. No. 341,994
Claims priority, application Japan, Apr. 7, 1972, 47/34,453
Int. Cl. C07c *3/30*
U.S. Cl. 260—683 R **23 Claims**

1. In a process for cracking liquid hydrocarbon into gases in a fluidized bed of solid particles, the improvement comprising;

(a) forming a unitary fluidized bed of solid particles having a central zone for cracking a starting liquid hydrocarbon to cracked gases, an upper zone for quenching said cracked gases, and a lower zone for cracking liquid hydrocarbon recovered from said cracked gases, said central zone communicating with said lower zone and said upper zone through narrow passages or neck zones formed therebetween;

(b) spraying said starting liquid hydrocarbon and a first portion of steam as a fluidizing gas into central zone, while passing a second portion of steam, cracked gases from recovered liquid hydrocarbon, hereinafter described, and entrained solid particles from said lower zone into said central zone from the bottom thereof through said narrow neck zone, thereby cracking said starting liquid hydrocarbon in said central zone to gases;

(c) spraying a liquid hydrocarbon selected from the group consisting of a said starting liquid hydrocarbon and said recovered liquid hydrocarbon into said upper zone, while passing a second gas mixture comprised of said first and second portions of steam, said cracked gases and entrained solid particles from said central zone into said upper zone from the bottom thereof through said narrow neck zone, whereby said cracked gas mixture is quenched and a portion of the carbon, tar and heavy oil fractions which are contained in said cracked gas mixture adhere to said entrained solid particles;



(d) removing said cracked gas mixture from said upper zone and treating said cracked gas mixture to separate said carbon, tar and heavy oil fractions, which comprise the recovered liquid hydrocarbon, referenced hereinbefore, to be fed to said bed, while a portion of said entrained solid particles are removed from said upper zone and recycled to said lower zone; and

(e) feeding oxygen, said second portion of steam as a fluidized gas and said recovered liquid hydrocarbon into said bottom of said lower zone to fluidize said solid particles throughout and partially burn said recovered liquid hydrocarbon, thereby cracking said recovered liquid hydrocarbon to said cracked gases.

3,848,017

THERMAL CRACKING OF HYDROCARBONS IN THE PRESENCE OF ADDED SULFUR COMPOUNDS AND NITRIC OXIDE

Harold Shalit, Drexel Hill, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

No Drawing. Filed Sept. 24, 1973, Ser. No. 400,482
Int. Cl. C07c *3/30*
U.S. Cl. 260—683 R **11 Claims**

1. A method for the thermal cracking of mixtures of normally liquid hydrocarbons having at least 5 carbon atoms in the molecule characterized by increased conversion to lower molecular weight products and decreased production of products boiling in the same range as said normally liquid hydrocarbon charge mixture which comprises adding sulfur, a sulfur compound selected from the group consisting of carbon disulfide, carbonyl sulfide, am-

monium sulfide, mercaptans, alkyl sulfides, alkyl disulfides or mixtures thereof together with nitric oxides to a vaporized stream of said normally liquid hydrocarbon charge mixture, thereafter subjecting the resulting sulfur and nitric oxide-containing hydrocarbon stream to thermal cracking conditions and recovering the thermally cracked products.

3,848,018

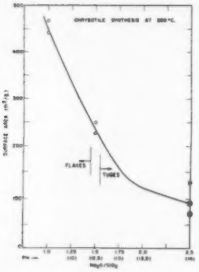
HYDROISOMERIZATION OF NORMAL PARAFFINIC HYDROCARBONS WITH A CATALYST COMPOSITE OF CHRYSOTILE AND HYDROGENATION METAL

Harry E. Robson, Baton Rouge, La., assignor to Esso Research and Engineering Company

Application Mar. 9, 1972, Ser. No. 233,368, which is a division of application Ser. No. 68,324, Aug. 31, 1970, now Patent No. 3,729,429. Divided and this application Aug. 24, 1973, Ser. No. 391,461

Int. Cl. C07c *5/30*

U.S. Cl. 260—683.65 **9 Claims**



1. A process for the hydroisomerization of normal paraffinic hydrocarbons to produce products enriched in iso-paraffin content for octane improvement comprising contacting feeds containing said hydrocarbons, in the presence of added hydrogen, at temperatures ranging from about 120° C. to about 260° C., and pressures ranging from about 150 to about 750 p.s.i., with a catalyst composite comprising chrysotile combined with a hydrogenation metal.

3,848,019

CATALYTIC CONVERSION OF HYDROCARBONS USING A RHENIUM-ALUMINA CATALYST

John W. Myers, Bartlesville, Okla., assignor to Phillips Petroleum Company

No Drawing. Original application Dec. 24, 1970, Ser. No. 101,419, now Patent No. 3,726,810. Divided and this application Dec. 14, 1972, Ser. No. 314,960

Int. Cl. C07c *5/24*

U.S. Cl. 260—683.68 **10 Claims**

1. A catalytic isomerization process comprising contacting a hydrocarbon feedstream containing paraffins or naphthenes or mixtures thereof in a contacting zone with an active rhenium-containing alumina catalyst said catalyst consisting essentially of alumina and from 0.01 to 5 weight percent rhenium prepared by heating the rhenium-containing alumina at a temperature in the range of 400 to 1500° F. in a dry ambient and thereafter treating the heated rhenium-containing alumina with at least one anhydrous treating agent selected from the group consisting of Cl_2, HCl, HBr, Br_2, and the Cl and Br derivatives of methane at a temperature of 400 to 1500° F. for at least 10 minutes.

3,848,020

PROCESS FOR PRODUCING HOMO- AND COPOLYMERS OF CYCLIC ACETALS

Karlheinz Burg, Langenhain, Taunus, and Helmut Schlaf, Kelkheim, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

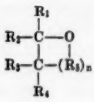
No Drawing. Filed Aug. 17, 1972, Ser. No. 281,559

Claims priority, application Germany, Aug. 19, 1971, P 21 41 600.2

Int. Cl. C08g *1/04, 1/20*

U.S. Cl. 260—823 **5 Claims**

1. In a process for producing moldable homopolymers of trioxane or copolymers comprising a major amount of units derived from trioxane and a minor amount of units derived from a linear acetal of an α,ω-diol or a cyclic acetal of the formula



wherein R_1, R_2, R_3 and R_4 may be the same or different represent hydrogen or an alkyl group which can be halogen-substituted, R_5 represents an oxymethylene radical which can be substituted by an alkyl or halogen-substituted alkyl group, and n is 1 to 3, or when n is 1, R_5 can be the radical $—(O—CH_2CH_2)_m—OCH_2—$ wherein m is 1 to 3, at a temperature between the melting point and boiling point of the monomer or monomer mixture in the presence of a protonic acid, the improvement which consists in using an anhydrous perfluoroalkyl sulfonic acid with 1 to 18 carbon atoms as the protonic acid.

3,848,021

THERMOPLASTIC MOLDING COMPOSITION ON THE BASIS OF POLY(OXYMETHYLENES)

Gunter Sextro, Naurod, Taunus, and Karlheinz Burg, Langenhain, Taunus, Germany, assignors to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning, Frankfurt am Main, Germany

No Drawing. Filed Aug. 22, 1972, Ser. No. 282,720

Claims priority, application Germany, Aug. 23, 1971, P 21 42 091.7

Int. Cl. C08g *37/02*

U.S. Cl. 260—823 **10 Claims**

1. Process for the manufacture of a thermoplastic molding composition on the basis of poly(oxymethylenes), which comprises mixing

(a) from 99.9 to 80 weight percent of a linear poly (oxymethylene), which may contain up to 20 weight percent, relative to the said poly(oxymethylene), of oxyalkylene groups having from 2 to 8 adjacent carbon atoms, and

(b) from 0.1 to 20 weight percent of a poly(oxymethylene) containing from 0.1 to 30 weight percent, relative to the said poly(oxymethylene), of polyether segments derived from cyclic ethers having 3 to 5 ring members and having a number average molecular weight of at least 500, and up to 20 weight percent of oxyalkylene groups having from 2 to 8 adjacent carbon atoms,

each of the components being in a pulverulent or granulated form at a temperature below 100° C., and subsequently melting and homogenizing the mixture in a mixing device at a temperature of from 150° to 250° C., and then removing it from the mixing device.

3,848,022

WATER-SOLUBLE OR INHERENTLY WATER-DISPERSIBLE CONDENSATION PRODUCTS WHICH CROSS LINK WITH HEATING AND THE USE OF THESE CONDENSATION PRODUCTS AS CURING AGENTS FOR ORGANOPOLYSILOXANES

Willy Bernheim, Diedorf, near Augsburg, and Hans Deiner, Neusass, near Augsburg, Germany, assignors to Chemische Fabrik Pfersee GmbH, Augsburg, Germany

No Drawing. Original application July 13, 1970, Ser. No. 54,590, now Patent No. 3,372,502. Divided and this application Jan. 2, 1973, Ser. No. 320,687
Claims priority, application Germany July 19, 1969, P 19 36 886.6
Int. Cl. C08g 45/16
U.S. Cl. 260—824 EP 4 Claims

1. A process of curing organopolysiloxanes selected from the group consisting of dialkyl polysiloxanes, alkyl hydrogen polysiloxanes and mixtures thereof with water-soluble or inherently water-dispersible condensation products as curing agents comprising adding to the organopolysiloxanes an effective amount of a condensation product obtained by reacting by heating a mixture consisting of

(a) about 1 mole of a compound selected from the group consisting of urea, guanidine, acetoguanadine, cyanamide, dicyandiamide, melamine, alkyl guanamines, aryl guanamines, ethylene urea, propylene urea and biuret;

(b) about 0.25–2.5 moles of an epoxy resin compound containing in the molecule on the average more than one epoxy group; and

(c) about 0.1–2 moles of an amine of the general formula

wherein R_1 is an alkyl group having 2–4 carbon atoms or an alkanol having 2–5 carbon atoms, R_2 and R_3 are independently selected from hydrogen, an alkyl group having 1–4 carbon atoms or an alkanol having 2–5 carbon atoms, and said amine of the general formula has at least two reactive hydrogen atoms present in the molecule and terminating the reaction by the addition of a volatile acid and water to form condensation products, drying and curing.

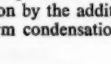
3,848,023

ANTISTATIC COMPOSITION AND FIBER MADE THEREFROM

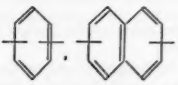
William M. Baggett and Ullman C. Garrett, Jr., Pensacola, and Rupert J. Snooks, Jr., Gulf Breeze, Fla., assignors to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Feb. 22, 1973, Ser. No. 334,523
Int. Cl. C08g 41/04
U.S. Cl. 260—857 PG 7 Claims

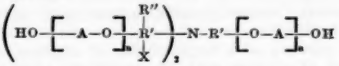
1. An antistatic composition of matter comprising a high molecular weight fiber-forming polycarbonamide wherein the recurring carbonamide linkages are an integral part of the polymer chain, said polycarbonamide being either a copolymer of at least two different polycarbonamide-forming substances or a melt blend of at least two different polycarbonamide polymers, said polycarbonamide being composed of about 6–24 weight percent aromatic nuclei and a high molecular weight poly(alkylene ether) as a distinct phase in the form of small elongated particles from 1 to 15 percent based on the weight of the composition formed by the ester interchange reaction of

(a) 

wherein R is an alkyl radical of 1 to 4 carbon atoms and Y is a divalent organic radical selected from the group consisting of



and a linear or branched alkylene radical of 1 to 20 carbon atoms; and

(b) 

wherein R′ is a linear or branched C_2–C_4 alkylene radical, R″ is a C_{12}–C_{24} alkyl radical, A is a linear or branched C_2–C_4 alkylene radical, the sum of the n's is about 25 to 75, X is hydrogen or an alkyl radical of 1 to 4 carbon atoms; and the mol ratio of (a) to (b) is from about 1:9 to about 1:1.

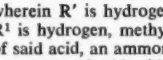
3,848,024

COATING COMPOSITIONS OF POLYESTERURETHANES, CARBOXY CONTAINING COPOLYMERS AND POLYISOBUTYLENE

Eduard Muck, Otrokovice, Jaroslav Strachota, Moravou, and Josef Horak, Gottwaldov, Czechoslovakia, assignors to Statni Vyzkumny ustav Kozedelny, Gottwaldov, Czechoslovakia

No Drawing. Continuation of application Ser. No. 118,572, Feb. 24, 1971. This application Nov. 21, 1972, Ser. No. 308,322
Claims priority, application Czechoslovakia, Mar. 5, 1970, 1,481/70
Int. Cl. C08g 41/04
U.S. Cl. 260—859 9 Claims

1. A polyurethane based elastomeric coating and impregnating composition consisting essentially of (a) a linear thermoplastic polyester-urethane elastomer having a Shore Hardness reading of about 80–90, (b) about an equimolar amount based on the repeating unit of said elastomer of a copolymer of (1) a monomer selected from the group consisting of an alpha,beta-unsaturated polycarboxylic acid having the formula



wherein R′ is hydrogen, methyl, phenyl or carboxyl and R^1 is hydrogen, methyl or methylcarboxyl, an alkali salt of said acid, an ammonium salt of said acid, a lower alkyl monoester of said acid, an anhydride of said acid, a monoamide of said acid and a mononitrile of said acid with (2) a monomer selected from the group consisting of lower olefins, lower diolefins, chloroprene, styrene, stilbene, isostilbene, vinyl alcohol, vinyl acetate, vinyl lower alkyl ethers, alkyl acetate, lower alkyl acrylates and methacrylates, acrylonitrile and methacrylonitrile, wherein components (1) and (2) of the copolymer are present in mol ratios of 15:85 to 50:50, and (c) an organic solvent medium for the elastomer (a) and the copolymer (b) having dispersed therein 4.0% to 50% polyisobutylene based on the weight of the elastomer (a) and the copolymer (b).

3,848,025

GRAFTED ETHYLENE POLYMERS

Heinrich Alberts, Cologne, and Herbert Bartl, Odenthal-Hahnenberg, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Oct. 10, 1972, Ser. No. 296,050
Claims priority, application Germany, Oct. 14, 1971, P 21 51 237.8
Int. Cl. C08f 15/00
U.S. Cl. 260—878 R 8 Claims

1. A process for the production of a graft polymer which comprises polymerizing, in the presence of a radi-

cal former in homogeneous or heterogeneous phase, a monomer mixture of

(a) acrylonitrile, methacrylonitirle or a mixture thereof,

(b) at least one mono-olefin having from 2 to 18 carbon atoms, and

(c) 0 to 50% by weight, based on the total monomers, of at least one member selected from the group consisting of acrylic acid and methacrylic acid esters having from 1 to 18 carbon atoms in the alcohol moiety, methacrylamide, acrylic acid and methacrylic acid,

in the presence of a homopolymer of ethylene or a copolymer of ethylene with (i) an organic vinyl ester or with (ii) an α,β-mono-olefinically unsaturated carboxylic acid or a derivative thereof, said acids having 2 to 4 non-carboxyl carbon atoms.

3,848,026

RUBBERY VULCANIZABLE COMPOSITION

Toshio Yoshimoto, Takaaki Imamura, Kazuo Tanaka, and Arata Miyagi, Tokyo, Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

No Drawing. Application Aug. 19, 1970, Ser. No. 64,959, now Patent No. 3,798,190, which is a continuation-in-part of abandoned application Ser. No. 677,731, Oct. 24, 1967. Divided and this application Sept. 11, 1973, Ser. No. 396,132

Claims priority, application Japan, Nov. 3, 1966, 41/72,485

Int. Cl. C08d *9/08;* **C08f** *29/12*

U.S. Cl. 260—888 **2 Claims**

1. As a new composition of matter, a rubbery vulcanizable composition comprising a blend of (a) at least one of polymers selected from the group consisting of butyl rubber and ethylene-propylene terpolymer and (b) from 5 to 95 parts by weight of a hydrogenated copolymer per 100 parts by weight of said blend, said hydrogenated copolymer having secondary transition temperature over −100° C. and polymeric monomer units which consist of

(1) styrenic units of from 5 to 60 percent by weight,

(2) butadiene units of more than 2 percent by weight, and

(3) hydrogenated conjugated diolefinic units of more than 10 percent by weight, wherein the styrenic units are randomly distributed in the polymeric monomer units.

3,848,027

METHOD OF PREPARING WATER-DISPERSIBLE POLYOLEFIN FIBERS AND PRODUCT FORMED THEREFROM

Dennis L. Forbess, Vancouver, William A. Kindler, Jr., Camas, and Rueben A. Marti, Vancouver, Wash., assignors to Crown Zellerbach Corporation, San Francisco, Calif.

No Drawing. Continuation-in-part of abandoned application Ser. No. 168,383, Aug. 2, 1971. This application Feb. 26, 1973, Ser. No. 335,965

Int. Cl. C08f *29/12, 47/00*

U.S. Cl. 260—897 B **13 Claims**

1. A method of forming water-dispersible polyolefin fibers comprising vaporizing solvent from an aqueous mass of solvent-containing polyolefin fibers, in the presence of between about 0.1% and about 10% by weight polyvinyl alcohol based on the dry weight of the fibers.

3,848,028

PERMANENTLY ANTISTATIC ACRYLONITRILE POLYMERS CONTAINING A MERCAPTO POLYETHER

Helmut Engelhard, Leverkusen, Gunter Blankenstein, Stommeln, and Ulrich Reinehr, Dormagen, Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 8, 1973, Ser. No. 386,509

Claims priority, application Germany, Aug. 8, 1972, P 22 38 940.8

Int. Cl. C08f *29/56*

U.S. Cl. 260—898 **4 Claims**

1. A permanently antistatic acrylonitrile polymer consisting of a mixture of polyacrylonitrile or an acrylonitrile copolymer containing at least 70% by weight of acrylonitrile and as an antistatic agent, 0.5 to 15% by weight, based on the total mixture, of a mercapto polyether of the formula

$$X—S—Y$$

in which

X represents the group

$$R—O—\left(C_nH_{2n}O\right)_o\left(C_mH_{2m}—O\right)_p—CH_2—\underset{\underset{OZ}{|}}{CH}—CH_3—$$

R represents a member selected from the group consisting of C_{1-30}-alkyl, cycloalkyl, C_{3-30}-alkenyl, aryl, polyaryl, alkaryl or aralkyl,

n represents an integer of from 2 to 4,

m represents an integer of from 2 to 4,

o represents O or is an integer of from 1 to 40,

p represents an integer of from 4 to 40,

Z represents hydrogen or

$$-\left(\underset{\underset{CH_2SH}{|}}{CH_3—CH—O—}\right)_qH$$

wherein

q represents an integer of from 1 to 10 and

Y represents hydrogen, the group X or an ionic valency of a monovalent to trivalent cation.

3,848,029

TRIMETHYLOLALKANE DI-ALLYL ETHER-ESTER COATING COMPOSITIONS

Edward Davis Watkins, La Grange, Ky., assignor to Celanese Coatings & Specialties Company, New York, N.Y.

No Drawing. Filed Nov. 1, 1973, Ser. No. 412,372

Int. Cl. C08f *29/24*

U.S. Cl. 260—899 **7 Claims**

1. A coating composition comprising:

A. about 10 to about 75% by weight of a polyvinyl chloride polymer containing from about 60 to 100% by weight of vinyl chloride units and 40 to 0% of monoethylenically unsaturated monomer units, said monomers being copolymerizable with the vinyl chloride monomer; and

B. about 90% to about 25% by weight of the reaction product of a diallyl ether compound having the general formula

$$(CH_2{=}CH—CH_2—O—CH_2)_2—\underset{\underset{CH_2OH}{|}}{C}—R$$

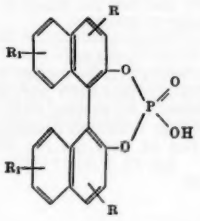
wherein R is methyl or ethyl and a polycarboxylic acid having from 2 to 4 unreacted polycarboxyl (or corresponding anhydride) groups.

3,848,030
OPTICAL ISOMERS OF BINAPHTHYL-PHOSPHORIC ACIDS

Rene Viterbo and Jean Jacques, Paris, France, assignors to Richardson-Merrell S.p.A., Naples, Italy

No Drawing. Filed Mar. 10, 1972, Ser. No. 233,793
Claims priority, application Italy, Mar. 18, 1971, 49,167/71
Int. Cl. C07f 9/12
U.S. Cl. 260—936 8 Claims

1. The essentially pure single optical isomer of a compound of the structural formula



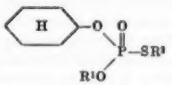
in which R and R_1 are symmetrical and independently hydrogen, halogen, lower alkyl of 1 to 8 carbon atoms inclusively or nitro, and their corresponding bi-4,5,6,7-tetrahydronaphthyl compounds essentially free of the corresponding isomer.

3,848,031
O-ALKYL-O-CYCLOHEXYL - S - ALKYL-, HALOALKYL- OR ALKENYL-PHOSPHOROTHIOLATES

Shigeo Kishino, Yasuo Yamada, Yoshio Kurahashi, and Toyohiko Kume, Tokyo, Japan, assignors to Bayer Aktiengesellschaft, Leverkusen, Germany

No Drawing. Filed Aug. 16, 1972, Ser. No. 281,252
Claims priority, application Japan, Aug. 18, 1971, 46/62,276
Int. Cl. A01n 9/36; C07f 9/16
U.S. Cl. 260—956 9 Claims

1. An organic O-alkyl-O-cyclohexyl-phosphorothiolate of the formula:



(I)

wherein

R^1 is alkyl of 1 to 6 carbon atoms, and

R^2 is alkyl, haloalkyl or alkenyl of 1 to 6 carbon atoms, or propargyl.

3,848,032
PROCESS FOR PREPARING PHOSPHORUS-CONTAINING ACIDS

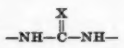
William Monroe Le Suer, Cleveland, and Horton Dunn, Jr., Euclid, Ohio, assignors to The Lubrizol Corporation, Wickliffe, Ohio

No Drawing. Filed Dec. 8, 1972, Ser. No. 313,306
Int. Cl. C07f 9/08
U.S. Cl. 260—981 9 Claims

1. In the process for preparing phosphorodithioic acids of the formula

wherein R and R′ are each independently selected from hydrocarbyl and substituted hydrocarbyl groups by contacting (A) at least one hydroxy compound of the formula ROH or R′OH, where R and R′ are as defined above, with (B) phosphorus pentasulfide, the improvement therein comprising reacting (A) and (B) in the presence of a catalytically effective amount of at least one nitrogen-containing compound selected from the class consisting of

wherein X is oxygen or divalent sulfur and Y is an alkylene radical of two to seven carbon atoms which, with the



group forms a 5-, 6-, or 7-membered ring, and

wherein X is oxygen or divalent sulfur, R″ is H, NH_2—alkyl of up to twenty carbon atoms, hydrocarbon aryl groups of up to twenty carbon atoms, and each of R_1 and R_2 are independently H, lower alkyl, or lower alkenyl with the proviso that one of R_1 and R_2 together with R″ and

the group can form a 5-, 6-, or 7-membered lactam.

3,848,033
PROCESS FOR PREPARING AGGREGATES

James L. Callahan, Bedford Heights, Arthur F. Miller, Cleveland, and Wilfrid G. Shaw, Lyndhurst, Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed July 13, 1972, Ser. No. 271,387
Int. Cl. B29d 23/00
U.S. Cl. 264—13 9 Claims

1. A process for preparing aggregates comprising

(a) preparing a slurry, said slurry comprising a suspending liquid and distinct particles of a first solid suspended in said liquid;

(b) preparing a particle bed consisting of particles of a second solid;

(c) forming droplets of said slurry; and

(d) dropping said droplets of said slurry into said particle bed under conditions where said suspending liquid is at least partially removed from the slurry droplet to form an aggregate of said distinct particles of said first solid.

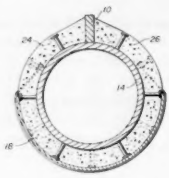
3,848,034
METHOD OF APPLYING REFRACTORY COVERING TO SKID RAIL

Frank W. Schaefer, 1678 Cory Drive, Dayton, Ohio 45406

Filed June 7, 1972, Ser. No. 260,372
Int. Cl. F27d 1/16
U.S. Cl. 264—30 2 Claims

1. In a method of applying low slump refractory material to form an insulating covering on a length of substantially horizontal skid rail cooling pipe having anchoring structure projecting therefrom, the molding of a first section of refractory material in situ around a lower portion of predetermined length of said cooling pipe in surrounding relation to at least a portion of said anchoring structure including the steps of taking a substantially

rigid form having a trough, laying a sheet of flexible material against the upper face of said trough, placing the refractory material mix in said trough, advancing said form toward said length of cooling pipe to bring the refractory material mix into engagement with said portion of said anchoring structure, vibrating said form at relatively high speed to permit said form to be easily moved toward said length of cooling pipe and to cause said refractory material mix to completely surround said portion of said anchoring structure, moving said form toward said length of pipe until the refractory material mix is engaged therewith, securing said sheet to said length of cooling pipe, and removing said form whereby said refractory material mix is permitted to continue to harden while held by said sheet, whereby all of the aforementioned steps may be repeated on adjacent lengths of cooling pipe using said form.



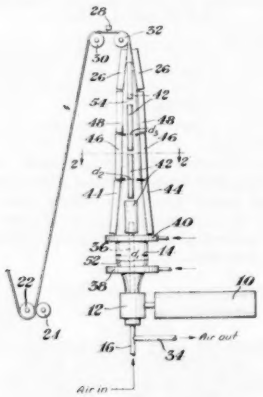
3,848,035
PROCESS OF MANUFACTURE OF FILM HAVING THICKENED PROFILES THEREIN

Raymond D. Behr, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of abandoned application Ser. No. 99,782, Dec. 21, 1970. This application Jan. 3, 1972, Ser. No. 214,753

Int. Cl. B29d *7/22, 23/04*

U.S. Cl. 264—40 **2 Claims**



1. In a method of manufacturing film, the steps of:
(a) continuously extruding a seamless tube of film while providing pressure internally to the tube, and then collapsing the moving tube at an area remote from the point of extrusion;
(b) integrally extruding with the tube, a first thickened profile of a general type defining a continuous gap the width of which is sensitive to hoop tension in the tube during a period in its manufacture, and at least a second thickened profile spaced circumferentially from the gap defining profile and adapted to be interlockingly receivable in said gap by means of cooperating sizing and configuration between the profiles, said profiles extending continuously in the direction of extrusion along the inner surface of the tube;
(c) passing the moving tube between opposed, spaced apart flattening means, said flattening means being adapted to partially flatten the tube over a substantial part of the region existing between the film frost line and the frost line of said thickened profiles; and
(d) controlling the ultimate width of said gap through means of controlling the spacing between said flattening means and thus the degree of flattening effect applied thereby to the tube.

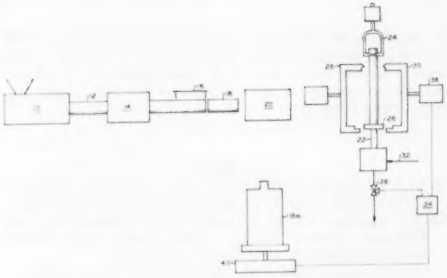
3,848,036
DELAYED VENTING IN PRODUCTION OF ORIENTED HOLLOW ARTICLES

Charles L. Seefluth, Bartlesville, Okla., assignor to Phillips Petroleum Company

Filed Oct. 24, 1972, Ser. No. 299,722

Int. Cl. B29c *17/07*

U.S. Cl. 264—40 **9 Claims**



1. In a method for forming oriented closed end hollow articles comprising heating a thermoplastic parison to orientation temperature, expanding said parison out against a mold formed by two mold parts while said parison is at said orientation temperature, by the introduction of internal fluid pressure, venting said thus formed hollow article to relieve said pressure and opening said mold parts enclosing said thus formed hollow article to remove same, the improvement comprising: opening said mold parts at a time after said venting is begun, which time is less than the time required for said venting to be complete, the volume of said hollow articles being measured and the time interval between said beginning of venting and said opening of said mold parts being adjusted in response to the amount said measured volume is different from a predetermined value to achieve a desired volume.

3,848,037
METHODS OF PRODUCING OIL-FREE AND WAX-FREE SURFACES ON POLYURETHANE MOLDINGS

Robert Charles Harper, Loveland, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

No Drawing. Continuation-in-part of abandoned application Ser. No. 881,926, Dec. 3, 1969. This application Dec. 15, 1972, Ser. No. 315,286

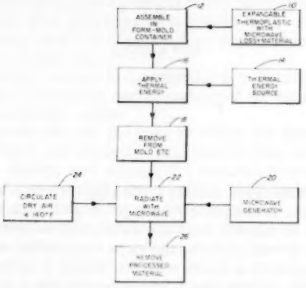
Int. Cl. B28b *7/38;* **B29c** *1/04;* **B29d** *27/00*

U.S. Cl. 264—46.4 **9 Claims**

1. A process for producing polyurethane moldings having surfaces free of adhesion inhibiting mold release agent comprising the steps of:
(a) overcoating a mold, which has been coated with a hydrophobic mold-release agent, with a continuous,

solid barrier layer of a water-soluble film forming material reactive with isocyanate groups;
(b) passing into the mold a polyurethane molding composition containing reactive isocyanate groups;
(c) polymerizing said polyurethane molding composition in contact with said barrier layer material containing a plurality of moieties reactive with isocyanate groups;
(d) removing the resultant molding; and
(e) washing the surface of said molding with water to substantially remove said water-soluble barrier layer.

3,848,038
DRYING EXPANDED PLASTIC WITH MICROWAVE ENERGY
Edward C. Dench, Annisquam, Mass., assignor to Raytheon Company, Lexington, Mass.
Filed June 4, 1973, Ser. No. 366,959
Int. Cl. B29c *19/02;* **B29h** *5/26;* **H05b** *9/06*
U.S. Cl. 264—51 **1 Claim**

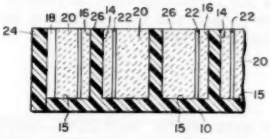


1. A method of processing expandable plastic material principally of a polystyrene composition comprising the steps of:
mixing microwave energy absorbing material selected from the group including carbon, graphite, magnetite, barium titanate and lossy ferrites with said plastic material;
placing said mixed plastic and additive materials in a mold to provide the desired expanded object configuration;
heating said mold by a moisture laden atmosphere to cause expansion of said material within said mold;
removal of said expanded foamed plastic material object from said mold;
radiating said removed expanded foamed plastic material object with microwave energy a sufficient time to diffuse residual interstitial moisture to the surface; and
simultaneously circulating a drying medium over said object to remove substantially all of the surfaced moisture.

3,848,039
METHOD OF MAKING PATTERNED LAYERS
Ernst Schneppenhorst, Krefeld, and Ferdinand Leifeld, Hasenheide, West Germany, assignors to Textilausrustungs-Gesellschaft Schroers & Co., and Eduard Kusters Machinenfabrik, both of Krefeld, Germany
No Drawing. Filed Dec. 3, 1971, Ser. No. 204,622
Claims priority, application Germany, Dec. 5, 1970, P 20 59 936.4
Int. Cl. B29c *21/00*
U.S. Cl. 264—73 **9 Claims**

1. A process for coating a textile web with a curable polymeric material in a random color pattern, comprising: applying a liquid film to a moving, inert carrier web, said liquid film consisting of a solvent for said polymeric material; applying to said liquid film a low-viscosity colored mxture of said polymeric material in a solvent therefor to form a discontinuous, random pattern of said colored mixture; curing said polymeric material, while keeping a random pattern; forming over said random pattern a continuous layer of a polymeric material and applying a textile web to said continuous layer; curing said continuous layer in contact with said textile web to form a coated textile product and removing the inert carrier from said coated textile product.

3,848,040
APPARATUS AND METHOD FOR FORMING SLIP CAST BODIES WITH CAVITIES
James O. Confer, Tioga, Pa., and George D. McTaggart Corning, N.Y., assignors to Corning Glass Works Corning, N.Y.
Filed Apr. 17, 1969, Ser. No. 817,095
Int. Cl. B28b *1/26, 7/18, 7/34;* **C04b** *33/28, 33/32*
U.S. Cl. 264—86 **9 Claims**



1. A mold assembly for forming a slip cast body with a cavity or cavities and from a slip of particulate inorganic material in volatile vehicle, which assembly comprises
an open-top, vehicle-absorbent mold,
at least one segmentally removable, vehicle-obsorbent, composite core means in said mold and extending to the open-top thereof with an uppermost portion of the external surface of said core means adapted to be exposed at the upper external surface of said body formed in said mold, substantially the remaining portion of the external surface of said core means cooperating with said mold to define a mold cavity and constituting a cavity-forming surface for said body, said core means made of at least one of each of first and second segments that are rigidly united together,
said first segment or segments being organic polymer foam,
said second segment or segments being plaster cast and hardened in contact with said foam,
portions of said first and second segments forming said external surface, including said uppermost portion and said cavity-forming surface, the part of said cavity-forming surface formed by said second segment or segments being greater in area than the remaining part thereof formed by said first segment or segments,
said second segment or segments being movable, upon removal of said foam when formed cavity-defining surface portions of said body have developed self-sustaining shape, into space theretofore occupied by said foam and away from said surface portions so that said second segment or segments are readily removable from said cavity or cavities in said formed body.

3,848,041

COLOR STABILIZATION OF ARTICLES FABRICATED FROM NITRILE POLYMERS

Domas Adomaitis, Chicago, Ill., assignor to Continental Can Company, Inc., New York, N.Y.

No Drawing. Filed June 22, 1972, Ser. No. 265,373

Int. Cl. B29c 17/07; B29f 3/03; C08f 45/00
U.S. Cl. 264—98 14 Claims

1. A method for inhibiting color change in hollow containers blow molded from a thermoplastic nitrile resin comprised of (1) 60 to 99 percent by weight of an alpha, beta-olefinically unsaturated mononitrile having the structure

$$CH_2=C(R)-CN$$

wherein R is selected from the group consisting of a lower alkyl group having to 1 to 4 carbon atoms and a halogen and (2) 1 to 40 percent by weight of at least one other olefinically unsaturated monomer copolymerizable with the mononitrile, which method comprises

humidifying the nitrile resin to a moisture content of between 0.2 to 0.6% by weight

extruding the humidified resin to form a tubular expansible parison and then expanding the parison to form the hollow article.

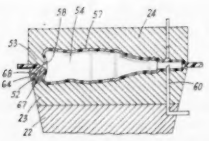
3,848,042

METHOD FOR BLOW MOLDING CONTAINERS HAVING RAISED BOTTOM WALL PORTIONS

Richard K. Shelby, Chicago, Ill., assignor to Monsanto Company, St. Louis, Mo.

Original application Dec. 30, 1970, Ser. No. 102,783, now Patent No. 3,718,416, dated Feb. 27, 1973. Divided and this application June 14, 1972, Ser. No. 262,750

Int. Cl. B29c 7/00, 17/07
U.S. Cl. 264—99 2 Claims



1. In a blow molding process for forming a container having a raised bottom wall by expanding a thermoplastic parison against the surface of a chamber defined by portions of partible blow mold sections when in closed position, and then moving at least a portion of the chamber surface defining the raised bottom wall away from the chamber to facilitate removing the container from the chamber, the improvement which comprises moving said sections toward and away from each other perpendicular to the axis of a circular path in a vertical plane to close and open such sections as they traverse said path, drawing a portion of the container bottom wall across a movably mounted corresponding portion of the chamber surface which defined said bottom wall portion, during opening of said partible sections to urge said corresponding portion of the chamber surface out of the way of the bottom wall portion as the container is being extracted from the mold section containing said movably mounted chamber surface portion, and then moving said chamber surface portion in the opposite direction under the influence of gravity only to a container-forming position at a predetermined position on said circular path prior to closing said sections.

3,848,043

METHOD OF MAKING CUT-IN-REGISTER CEILING TILE

John R. Garrick, Lititz, and Ernest B. Waters, Jr., Lancaster, Pa., assignors to Armstrong Cork Company, Lancaster, Pa.

Continuation of abandoned application Ser. No. 155,417, June 22, 1971. This application Apr. 17, 1973, Ser. No. 352,026

Int. Cl. B29j 5/04
U.S. Cl. 264—134 4 Claims

1. A process for making ceiling tiles which are approximately one foot square with a pattern on each tile which must be in registry with the pattern on adjacent tiles to form an overall pattern, the steps comprising, applying a paint coating to a board structure which is several square feet in size, cutting said board structure into a plurality of tile units of approximately one square foot, wetting the surface of the painted surface, then embossing on the tile unit an embossed pattern which is accurately positioned relative to the edges of the tile unit, said embossing step is carried out by the use of a punch press with a heated embossing structure, said embossing being accurately positioned so that a plurality of adjacent tile units will have their individual patterns in registry with the pattern of adjacent tile units, and then providing the tile units with an edge structure means to hold the tile units mounted in position in a ceiling.

3,848,044

CURED PHENOL-FORMALDEHYDE FIBERS AND METHOD FOR THE PRODUCTION THEREOF

Yoshichi Hagiwara, Katunobu Sato, Hideo Komatsu, Sadao Yuguchi, Nobuo Yoshizumi, Kenya Nagai, Hiromu Takeda, and Sei-Ichiro Ohnishi, Otsu, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Sept. 30, 1971, Ser. No. 185,063

Claims priority, application Japan, Oct. 2, 1970, 45/85,934; Dec. 23, 1970, 45/115,764; Apr. 13, 1971, 46/22,734; May 4, 1971, 46/28,911

Int. Cl. B28b 3/20; C08g 5/06
U.S. Cl. 264—176 F 10 Claims

1. The process for the manufacture of a cured crosslinked fiber from a phenol-formaldehyde resin comprising melt spinning a resin composition comprised of a curable novolac resin having a pH of at least 4 and a melt viscosity of 300–5,000 poise and a member selected from the group consisting of tetraoxymethylene, trioxane and mixture thereof and curing the obtained uncured resin fiber in the presence of an acid catalyst to provide said cured fiber.

3,848,045
PRE-FABRICATED GEL COATS

Stanley Oswitch, University Heights, and Kevin K. Kipp, Cleveland Heights, Ohio, assignors to Ferro Corporation, Cleveland, Ohio

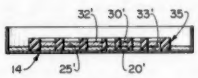
No Drawing. Continuation-in-part of application Ser. No. 199,752, Nov. 17, 1971, now Patent No. 3,770,690, which is a continuation of abandoned application Ser. No. 43,213, June 3, 1970. This application Aug. 6, 1973, Ser. No. 385,793
Int. Cl. B29d 3/00; C08g 51/04
U.S. Cl. 264—255 11 Claims

1. A process for molding a product from a curable, moldable resin composition in a mold therefor, comprising:
(a) lining said mold with a dry, flexible prefabricated gel coat comprising a layer of a partially cured, curable, epoxy resin formed by reacting an epoxy resin having a molecular weight in the range of 350 to 950 and an epoxy equivalent in the range 150 to 550 with a polydibasic acid polyanhydride having at least four anhydride repeating units in a polymer chain, and a fibrous reinforcing medium of thermoplastic resin compatible with the epoxy resin, said epoxy resin containing in parts by weight 50–85 parts of said polydibasic acid polyanhydride, 10–25 parts of fumed alumina, and 0.5–5 parts of an accelerator per 100 parts of said resin;
(b) adding to said mold a moldable resin composition selected from the group consisting of epoxy resins and polyester resins;
(c) heating the dry gel coat to soften the thermoplastic fibers and partially cured epoxy resin of the gel coat, flowing and shaping the softened thermoplastic fibers and partially cured epoxy resin to a desired shape determined by the mold; and
(d) finally curing the partially cured epoxy resin of the gel coat.

3,848,046
METHOD OF MANUFACTURING A SIMULATED STAINED GLASS ARTICLE

Michael W. Machet, 3717 Mariana Way, Santa Barbara, Calif. 93105

Filed July 26, 1972, Ser. No. 275,251
Int. Cl. B29c 9/00
U.S. Cl. 264—279 8 Claims



1. A method of manufacturing a simulated textured stained glass article comprising the steps of:
pouring a liquid, water soluble gel substance into a mold to form a thin gel layer on the bottom of the mold,
sprinkling a dry powdered, liquid soluble absorbent onto the top surface of the gel substance before the substance gels to produce a textured surface on said gel layer as it hardens;
permitting water from said top surface of said gel layer to be absorbed by said absorbent while said layer hardens to cause said absorbent to swell and merge into the gel surface and produce an irregular textured surface on said gel layer;
pouring a glass simulating plastic material in liquid form onto said textured surface after hardening of said gel layer and allowing said material to harden while receiving the impression of said textured surface on one side; and
removing said hardened gel substance from said plastic material by dissolving such in water to produce the finished article.

3,848,047
BRASSIDOYL PROPYLENE GLYCOL HYDROGEN SUCCINATE

Paul Seiden, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

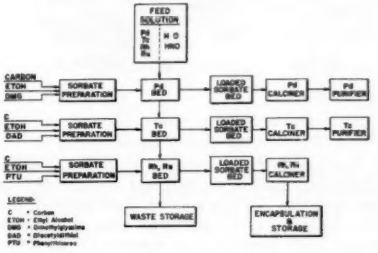
No Drawing. Original application Dec. 29, 1970, Ser. No. 102,525, now Patent No. 3,694,215. Divided and this application June 7, 1972, Ser. No. 260,689
Int. Cl. A23d 5/00; C07c 69/40
U.S. Cl. 260—404.8 1 Claim

1. Brassidoyl propylene glycol hydrogen succinate.

3,848,048
RECOVERY OF FISSION-PRODUCED TECHNETIUM, PALLADIUM, RHODIUM AND RUTHENIUM

Raymond H. Moore, Richland, Wash., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 12, 1973, Ser. No. 378,471
Int. Cl. C01g 55/00, 57/00
U.S. Cl. 423—22 5 Claims



1. A method for recovering palladium, technetium, and rhodium and ruthenium values from an aqueous acid feed solution containing these and other values and from each other comprising: contacting the feed solution with a first bed of carbon, said bed having adsorbed thereon dimethylglyoxime, whereby only the palladium is chelated and is retained on the first bed, contacting the feed solution with a second bed of carbon, said second bed having adsorbed thereon a chelating agent selected from the group consisting of diacetyl dithiol and diacetyltoluene-3,4-dithiol, whereby only technetium is chelated and remains on the bed, contacting the feed solution with a third bed of carbon, said bed having adsorbed thereon a chelating agent selected from the group consisting of 8-mercaptoquinoline and phenylthiourea, whereby only the rhodium and ruthenium are chelated and remain on the bed, and recovering the values from the carbon beds.

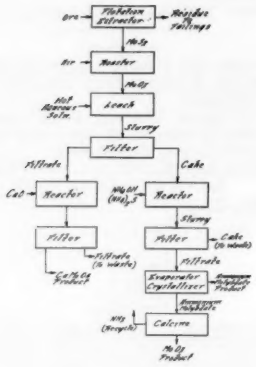
3,848,049
PROCESS FOR PRODUCING HIGH PURITY MOLYBDENUM OXIDE AND AMMONIUM MOLYBDATE

Richard A. Ronzio, Golden, Colo., Herbert Kay, New York, N.Y., and John D. Vincent, Golden, Colo., assignors to American Metal Climax, Inc.

Filed Jan. 27, 1972, Ser. No. 221,257
Int. Cl. C01g 39/00
U.S. Cl. 423—54 11 Claims

1. A process for producing a high purity molybdenum product which comprises the steps of extracting a molybdenite ore to produce a particulated concentrate having

an average particle size of less than about 200 mesh and consisting predominantly of MoS_2, oxidizing said concentrate to convert substantially all of the MoS_2 to molybdenum oxide, contacting the oxidized said concentrate with an aqueous leach solution at a temperature ranging from about 10° C. up to 100° C. forming a slurry containing up to about 50% solids for a period of time sufficient to extract at least a portion of the contaminating metals including copper, potassium, magnesium, aluminum, sodium and iron from said concentrate, contacting said aqueous leach solution with a cation exchange resin for adsorbing the extracted said contaminating metals



from said solution in the form of a loading on said resin, separating the aqueous leached said concentrate from the loaded said resin and said aqueous leach solution, contacting the separated said concentrate with an aqueous ammoniacal leach solution at a temperature ranging from about 25° C. up to about 100° C. and containing about 5% to about 30% ammonia for a period of time sufficient to convert substantially all of said molybdenum oxide therein to a soluble ammonium molybdate compound, separating the remaining solid residue from said ammoniacal leach solution and thereafter crystallizing said solution and recovering a high purity ammonium molybdate product.

3,848,050
PROCESS OF PREPARING MOLYBDENUM TRIOXIDE BY SUBLIMATION
Emile Joseph Jemal, 67 Davenport Road, Yonkers, N.Y. 10710
Filed July 5, 1972, Ser. No. 269,064
Int. Cl. C01g *39/00*
U.S. Cl. 423—59 **6 Claims**

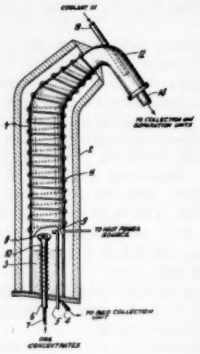
1. A process of preparing molybdenum trioxide of high purity from molybdenum-bearing ore concentrates, which comprises:

(a) continuously introducing in the lower region of a sealed reactor a molybdenum-bearing ore concentrate having a particle size smaller than about 20 mesh;

(b) continuously and separately introducing into the said lower region of said reactor through a separate inlet a stream of oxidizing gas at a temperature of from ambient to about 400° F.;

(c) contacting in said lower region said concentrate with said oxidizing gas at a temperature of about 1600–1700° F. to cause oxidation and substantially instantaneous sublimation of the molybdenum values to molybdenum trioxide;

(d) maintaining the reactor at a temperature sufficient to cause the molybdenum trioxide to rise toward the upper region in the reactor, wherein the non-sublimable components of the concentrate fall to the bottom of the reactor to maintain a gas-seal therein and are removed therefrom by mechanical means at such a rate as to maintain a substantially constant level at the bottom of the reactor;



(e) contacting the sublimed molybdenum trioxide in said upper region with a coolant medium comprising liquid sulfur dioxide or molybdenum pellets to cause condensation of the sublimate; and

(f) separating the condensed molybdenum trioxide from un-condensable gases associated therewith.

3,848,051
PROCESS FOR THE PRODUCTION OF TITANIUM TETRACHLORIDE
Robert J. Mas, Thann, and Andre Louis Michaud, Vieux Thann, France, assignors to Fabriques de Produits Chimiques de Thann et de Mulhouse, Thann, France
Continuation of application Ser. No. 664,665, Aug. 31, 1967. This application June 4, 1970, Ser. No. 43,598
Claims priority, application France, Sept. 6, 1966, 75,419
Int. Cl. C01g *23/04*
U.S. Cl. 423—79 **4 Claims**

1. In a process for the continuous production of titanium tetrachloride, wherein a finely divided bed of a titanium mineral and coke is maintained in a reactor, chlorine containing gas is introduced continuously into the lower portion of said bed so as to maintain the solids in said bed in a fluidized state and continuously to react with them, thus producing gaseous reaction products including titanium tetrachloride vapor, and a continuous stream of such gaseous reaction products with solid fines entrained therein is conducted from an upper region of the reactor into a separator in which solid fines are continuously separated and collected from said stream, the improvement which comprises continuously passing the fines collected by said separator directly back into the reactor by gravity flow thereof through a downwardly extending conduit that opens into said reactor at a level therein where the gases therein consist substantially entirely of said gaseous reaction products, while passing continuously from the reactor through said conduit, countercurrent to the returning fines, a limited flow of said gases sufficient to prevent clogging of said conduit by said fines.

3,848,052

PROCESS FOR THE PREPARATION OF STANNIC CHLORIDE

Elbert M. De Forest, Wichita, Kans., and Lewis A. St. Cyr, Thornton, and Loren H. Young, Northglenn, Colo., assignors to Vulcan Materials Company, Birmingham, Ala.

No Drawing. Filed May 17, 1973, Ser. No. 361,341

Int. Cl. C01g *19/08*

U.S. Cl. 423—96 **4 Claims**

1. Process for the preparation of stannic chloride by chlorination of tin metal, comprising the steps of:

(a) providing a body of molten tin in a reaction zone;

(b) introducing chlorine gas into said molten tin body to react with the tin to form stannic chloride;

(c) maintaining the molten tin at a substantially steady temperature which is above the boiling point of stannic chloride and between about 235° and about 350° C. by introducing liquid stannic chloride into said molten tin body simultaneously with and substantially at the same point as the chlorine gas at a rate and in an amount sufficient to absorb excess heat of reaction by the stannic chloride becoming heated and vaporized;

(d) recovering stannic chloride vapor; and

(e) condensing the vapor to produce liquid stannic chloride.

3,848,053

ALKYL ALUMINUM DISPOSAL METHOD

Luke J. Governale, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

No Drawing. Filed July 26, 1973, Ser. No. 382,726

Int. Cl. C01f *1/100, 7/04, 7/16*

U.S. Cl. 423—115 **17 Claims**

1. A method of recovering aluminum from a composition containing an alkyl aluminum compound, said method comprising reacting said composition with an aniline to form an aluminum anilide, hydrolyzing said aluminum anilide with aqueous base, and reacting the hydrolyzed product with an alkaline earth metal base to precipitate an alkaline earth metal aluminate in a recoverable form.

3,848,054

RECOVERY OF COBALT VALUES FROM THE LEACHED ORE TAILINGS OF A CONVENTIONAL AMMONIACAL LEACHING PROCESS

Tadeusz Karol Wiewiorowski, New Orleans, La., assignor to Freeport Minerals Company, New York, N.Y.

Filed June 2, 1972, Ser. No. 259,082

Int. Cl. C01g *1/12, 51/00, 53/00;* **C22b** *3/00, 7/00*

U.S. Cl. 423—140 **4 Claims**

1. A method for recovering cobalt values present in the leached ore tailings of an ammoniacal leaching process which comprises:

(a) treating a slurry containing a solid phase comprising the solids fraction of said leached ore tailings containing about 0.02 to 0.15 percent by weight cobalt and about 0.1 to 0.6 percent by weight nickel, and a liquid phase comprising an aqueous ammoniacal solution having a pH above 7, with sulfite ions in an amount sufficient to solubilize cobalt values present in said solid phase into said ammoniacal solution;

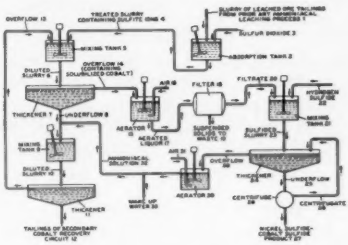
(b) blending the treated slurry prepared in step (a) with additional aqueous ammoniacal solution having a pH above 7 to thereby dilute said slurry;

(c) separating the diluted slurry prepared in step (b) into a first stream depleted in solids and a second stream enriched in solids;

(d) treating said first stream prepared in step (c) with an oxygen-containing gas in an amount sufficient to destroy residual sulfite ions present in said first stream;

(e) separating the solid phase of the first stream prepared in step (c) from the liquid phase of said first stream;

(f) treating the solids depleted, gas-treated liquid phase from step (e) with a sulfiding agent in an amount sufficient to precipitate solubilized cobalt and nickel values contained in said liquid phase as a mixed precipitate of cobalt sulfide and nickel sulfide having a nickel to cobalt weight ratio of about 0.5 to 2;



(g) separating the slurry of said liquid phase and cobalt sulfide-nickel sulfide precipitate prepared in step (f), after the precipitation of step (f) is completed, into a first stream depleted in solids and a second stream enriched in solids, and withdrawing said second stream containing the desired cobalt values as cobalt sulfide from the process;

(h) treating the solids depleted first stream prepared in step (g) with an oxygen-containing gas in an amount sufficient to destroy residual sulfide ions present in said first stream;

(i) adding make-up water to said first stream prepared in step (g), when required and mixing said first stream with the second stream prepared in step (c) to thereby dilute said second stream;

(j) separating the diluted stream prepared in step (i) into a first stream depleted in solids and a second stream enriched in solids, said second stream constituting the tailings of said method; and

(k) returning the first stream produced in step (j) for blending with the treated slurry prepared in step (a), said returned stream serving as said additional aqueous ammoniacal solution of step (b).

3,848,055

EXTRACTION OF STRONTIUM VALUES FROM CELESTITE

Allan C. Kelly, Pleasanton, Calif., assignor to Kaiser Aluminum & Chemical Corporation, Oakland, Calif.

No Drawing. Filed July 13, 1973, Ser. No. 379,125

Int. Cl. C22b *3/00, 29/00;* **C01f** *1/00, 11/00*

U.S. Cl. 423—158 **10 Claims**

1. Method of producing strontium hydroxide from strontium sulfate comprising:

(a) reacting a finely divided celestite with sufficient aqueous sodium hydroxide solution to form a slurry, the solution containing sufficient NaOH to maintain a concentration of at least 10 g./l. NaOH after reac-

tion of the sodium hydroxide in the solution with the celestite to form strontium hydroxide, the reaction being carried out at a temperature below the boiling point of water;

(b) separating the solid material resulting from step (a) from the aqueous solution;

(c) washing the solid material separated in step (b) to dissolve and remove any solid sodium sulfate present; said washing being conducted at a temperature of not greater than that of the reaction of step (a);

(d) dissolving the strontium hydroxide in the washed solid material produced in step (c) in water at a temperature of at least 90° C.;

(e) separating the strontium hydroxide solution produced in step (d) from the remaining solids; and

(f) recovering strontium values from the separated solution.

3,848,056

MOLTEN ALKALINE ALKANOIC MIXTURES FOR ABSORPTION OF SULFUR OXIDES

Anthony G. Fonseca, Ponca City, Okla., assignor to Continental Oil Company, Ponca City, Okla.

No Drawing. Filed Sept. 5, 1972, Ser. No. 286,496

Int. Cl. B01d *47/00;* **C01b** *17/00;* **B01j** *9/04, 9/08, 9/12, 9/16, 9/20*

U.S. Cl. 423—210.5 **8 Claims**

1. A method for removing sulfur oxides from gaseous streams comprising: contacting said gaseous streams with a molten mixture having a pH from about 7.0 to about 10.0 and containing from about 10 to about 99 weight percent metal alkanoate, wherein said metal is selected from the group consisting of sodium, potassium, lithium and magnesium, and wherein the alkyl moiety of said alkanoate contains from 1 to about 4 carbon atoms; and from about 1 to about 90 weight percent of an alkaline material selected from the group consisting of metal hydroxides, metal carbonates, metal bicarbonates and combinations thereof wherein said metal is selected from the group consisting of sodium, potassium, lithium and magnesium thereby selectively absorbing sulfur oxides and recovering a gaseous stream having a reduced sulfur oxide content.

3,848,057

METHOD AND COMPOSITION FOR REMOVING ACIDIC CONTAMINANTS FROM GASES

Frederic Leder, Elizabeth, David W. Savage, Summit, and Adam L. Shrier, Montclair, N.J., assignors to Exxon Research and Engineering Company

No Drawing. Filed Oct. 1, 1971, Ser. No. 185,898

Int. Cl. B01d *53/16, 53/34*

U.S. Cl. 423—223 **11 Claims**

1. A process for removing acid gases from a gaseous mixture, said acid gases being selected from the group consisting of CO_2, H_2S, HCN, CS_2, COS, SO_2 and oxidation products and sulfides of methane, ethane, propane and butane which comprises contacting said mixture with a solution, said solution comprising 5 to 40 wt. percent of an alkali metal salt, said salt selected from the group consisting of potassium carbonate and sodium carbonate and a synergistic promoter system comprising at least about 2 wt. percent of an amine, said amine being selected from the group consisting of piperidine, derivaties of piperidine, 1,6-hexanediamine and derivatives of 1,6-hexanediamine and boric acid, and said boric acid being present in the amount of from 0.5 to 5 moles of boric acid per mole of amine, at a temperature of 25 to 200° C., and a pressure of 5 to 2,000 p.s.i.g. and maintaining said solution in a single phase during said contacting wherein at least a portion of said acid gas is absorbed by said solution.

3,848,058

PURIFICATION OF GASEOUS STREAMS CONTAINING SULFUR DERIVATIVES

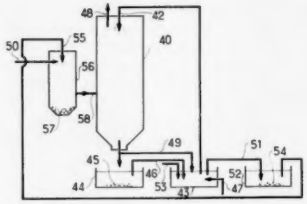
Pierre Poncet, Lyon, and René Trempu, Versailles, France, assignors to Compagnie Industrielle des Telecommunications Cit-Alcatel, Paris, France

Filed May 28, 1971, Ser. No. 147,933

Claims priority, application France, Aug. 5, 1970, 7028877; Feb. 19, 1971, 7105765

Int. Cl. B01d *53/34*

U.S. Cl. 423—242 **3 Claims**



1. A continuous process for purifying a gaseous stream derived from fuel combustion and containing sulfur dioxide by removing therefrom substantially all of the sulfur dioxide by a process which comprises:

(1) feeding the impure gas stream into a first zone;

(2) contacting said impure gas stream at a temperature of about 130 to 180° C., in said first zone, with a concentrated aqueous solution consisting essentially of ferric sulfate to at least partially dehydrate said concentrated aqueous solution, to remove a substantial portion of solid particles from said impure gas stream and to bring the temperature of said impure gas stream to 45 to 60° C.;

(3) feeding the resulting gaseous stream from step (2) into a second zone;

(4) countercurrently contacting said resulting gas stream in said second zone with a first aqueous solution consisting essentially of ferric sulfate to form a second aqueous solution containing sulfuric acid and ferrous sulfate and a purified gas stream substantially free of sulfur dioxide;

(5) separating said second aqueous solution into a first and a second portion;

(6) adding iron or an iron compound to only said first portion in an amount sufficient to neutralize the sulfuric acid contained therein to form a third aqueous solution consisting essentially of ferrous sulfate;

(7) combining said third aqueous solution and said second portion and oxidizing the combined aqueous solution by contacting said combined aqueous solution with a gas consisting of air only, said oxidation being conducted in the presence of sulfuric acid due to the sulfuric acid remaining in said second portion;

(8) withdrawing a portion of the resulting oxidized aqueous solution as a concentrated aqueous solution consisting essentially of ferric sulfate and feeding it to said first zone as said concentrated solution consisting essentially of ferric sulfate; and

(9) feeding the remaining portion of the resulting oxidized aqueous solution to said second zone as said

first aqueous solution consisting essentially of ferric sulfate; and

(10) repeating steps (1) through (9) to obtain a continuous process.

3,848,059

INORGANIC MICROSPHERES BY A DOUBLE EMULSION TECHNIQUE

Modesto Erneta, Princeton Junction, N.J., assignor to N L Industries, Inc., New York, N.Y.

No Drawing. Filed Dec. 22, 1972, Ser. No. 317,676
Int. Cl. C01f 5/00, 5/24, 5/40, 7/00, 7/74, 11/00, 11/18, 11/46
U.S. Cl. 423—327 1 Claim

1. A method for preparation of spheroidal shaped reticulated microparticles of a water insoluble inorganic salt which comprises forming a water-in-oil emulsion containing a water soluble inorganic salt in the water droplets of said water-in-oil emulsion, forming a second water-in-oil emulsion containing another water soluble inorganic salt in the water droplets of said second water-in-oil emulsion, mixing the two water-in-oil emulsions, said water droplets containing the two water soluble salts, contacting one another and said salts immediately reacting with one another to form double decomposition products in which one salt product is water insoluble and the other salt product is water soluble, separating the oil portion from said water droplets containing the double decomposition products, removing the water soluble salt in the water droplets from said water insoluble salt, and drying said water insoluble salt; the cation portion of said water insoluble salt selected from the group consisting of magnesium, calcium, strontium, barium and aluminum and the anion portion of said salt selected from the group consisting of silicate, carbonate and sulfate.

3,848,060

BROMOCINNAMALDEHYDE AS AN INSECT REPELLENT

Goro Izawa, 7–9, 6-chome, Zushi, and Tamio Nishimura, 4063–3 Ikuta, Kawasaki, both of Kanagawa-ken, Japan

No Drawing. Filed July 16, 1973, Ser. No. 379,727
Int. Cl. A01n 9/24
U.S. Cl. 424—333 6 Claims

1. A method for repelling insects from an inanimate object which comprises exposing said object to the vapor of an insect repelling amount of α-bromocinnamaldehyde.

3,848,061

PROCESS FOR PREPARING CONCENTRATED FLUOROSILICIC ACID

Wolfgang Laue and Eckehard Schreiber, Waltrop, and Friedrich Heyenga, Lunen, Germany, assignors to Firma Gewerkschaft Victor Chemische Werke, Castrop Rauxel, Germany

Filed July 15, 1971, Ser. No. 162,787
Claims priority, application Germany, July 16, 1970, P 20 35 300.8
Int. Cl. C01b 7/00, 33/00, 33/12
U.S. Cl. 423—341 5 Claims

1. A process for preparing a concentrated aqueous solution of fluorosilicic acid containing at least 28% by weight of fluorosilicic acid from a dilute solution containing at most 20% by weight of fluorosilicic acid and simultaneously recovering hydrogen fluoride and silicon tetrafluoride from a gaseous mixture containing the same, such as the mixture that is formed in recovering hydrogen fluoride from aqueous solutions of fluorosilicic acid by means of a polyglycol, which process comprises the following steps: (a) passing into a heated reaction zone a stream of a gaseous mixture containing hydrogen fluoride and silicon tetrafluoride together with a stream of hot dilute aqueous fluorosilicic acid, (b) maintaining the said reaction zone at such a temperature above the boiling point of water that a substantial proportion of the silicon tetrafluoride therein in hydrolyzed to form fluorosilicic acid and silica, (c) continuously withdrawing the stream of water vapor containing residual small proportions of hydrogen fluoride and silicon tetrafluoride that are volatilized in said reaction zone, and passing the said stream from the reaction zone to a rectification zone that is maintained at such a temperature as to distill off water vapor free from hydrogen fluoride and silicon tetrafluoride while retaining therein a distilland consisting of fluorosilicic acid having a higher concentration than the dilute solution that was initially passed into the said reaction zone, (d) continuously withdrawing a slurry of silica and concentrated fluorosilicic acid from the said reaction zone and passing the said slurry in heat-exchange relationship with the stream of dilute aqueous fluorosilicic acid that is being passed into the said heated reaction zone and continuously separating the silica from the said slurry and recovering therefrom the concentrated fluorosilicic acid containing at least 28% by weight of fluorosilicic acid, (e) continuously withdrawing from the said rectification zone water vapor free from hydrogen fluoride and silicon tetrafluoride that is volatilized therein, (f) continuously passing such amounts of hydrogen fluoride into the said rectification zone as to prevent the formation of silica therein by hydrolysis of any residual amounts of silicon tetrafluoride that are present therein, and (g) continuously withdrawing portions of the distilland consisting of concentrated fluorosilicic acid from the said rectification zone and passing them to the said heated reaction zone.

3,848,062

PREPARATION OF MONOTUNGSTEN CARBIDE

Roger A. Steiger, Canal Fulton, and William L. Wilson, Barberton, Ohio, assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Feb. 17, 1972, Ser. No. 227,049
Int. Cl. C01b 31/34; C22c 29/00
U.S. Cl. 423—440 15 Claims

1. In the process of producing tungsten carbide by vapor phase reaction of a volatile tungsten compound with a vaporous source of carbon at from about 300° C. to about 3000° C. in a reaction zone, the improvement which comprises the steps of introducing into said reaction zone the volatile tungsten compound and the source of carbon in amounts sufficient to provide therein at least one atom of carbon for each atom of tungsten, withdrawing from the reaction zone solid tungsten carbide product having ditungsten carbide as its principal component, and calcining the solid tungsten carbide product at from about 500° C. to about 1500° C. and for a time sufficient to produce monotungsten carbide as the principal component of the tungsten carbide product.

3,848,063

PROCESS FOR THE MANUFACTURE OF HIGH-PURITY LITHIUM HEXAFLUOROARSENATE

Raybon C. Cannon, Tucker, and Robert A. Wiesboeck, Stone Mountain, Ga., assignors to United States Steel Corporation

No Drawing. Filed Aug. 16, 1973, Ser. No. 389,602
Int. Cl. C01b 27/00; C01d 11/02
U.S. Cl. 423—464 6 Claims

1. Method of purifying lithium hexafluoroarsenate comprising adding impure lithium hexafluoroarsenate containing as impurities $HAsF_5OH$, $HAsOF_4$, $HAsO_2F_2$, H_2AsO_3F and HF to aqueous lithium hydroxide, heating the mixture to 80–100° C. to cause decomposition and precipitation of impurities, adding to the mixture lithium hydroxide to maintain the pH thereof at least at 10.5 and to cause further decomposition and precipitation of impurities, thereafter reducing the pH to from 7.5 to 9.0 by adding HF, separating the precipitates from the lithium hexafluoroarsenate, cooling the liquid thereform to 0–25° C. to precipitate lithium hexafluoroarsenate trihydrate,

and drying the lithium hexafluoroarsenate under vacuum at a temperature not exceeding 100° C. and with a dry inert sweep gas.

3,848,064

PRODUCTION OF SULFUR TETRAFLUORIDE FROM SULFUR CHLORIDES AND FLUORINE

Wilfried Becher, Ilten, and Joachim Massonne and Wilhelm Pohlmeyer, Hannover, Germany, assignors to Kali-Chemie Aktiengesellschaft, Hannover, Germany

No Drawing. Filed Apr. 12, 1973, Ser. No. 350,416

Claims priority, application Germany, Apr. 14, 1972, P 22 17 971.1

Int. Cl. C01b *17/45*

U.S. Cl. 423—469 **18 Claims**

1. A process for the continuous manufacture of sulfur tetrafluoride comprising:

(1) reacting in a reaction zone, sulfur chloride of the formula S_xCl_2 with gaseous fluorine at a temperature of about 50 to about 130° C. to form sulfur tetrafluoride and sulfur dichloride, (2) reacting said sulfur dichloride with sulfur to form S_xCl_2, returning to said reaction zone said sulfur dichloride of the formula S_xCl_2 formed in step (2) and (3) collecting said sulfur tetrachloride, said x having a value of about 1.1 to about 6.0.

3,848,065

METHOD FOR PRODUCING HYDROGEN IODIDE

Frank E. Paulik, St. Louis, Mo., assignor to Monsanto Company, St. Louis, Mo.

No Drawing. Filed Sept. 29, 1972, Ser. No. 293,686

Int. Cl. C01b *7/18*

U.S. Cl. 423—487 **4 Claims**

1. A process for producing aqueous hydrogen iodide which comprises reacting hydrogen and iodine in water at a temperature from about 70° to about 125° C. and a pressure from about 50 to about 80 p.s.i.g. in contact with a catalyst consisting essentially of a metal selected from the group consisting of rhodium and ruthenium supported on an inert material, the amount of metal in said catalyst being in the range from about 0.00001 mole to about 0.01 mole per mole of iodine.

3,848,066

PROCESS FOR PREPARING CRYSTALLINE MAGNESIUM FLUORIDE

Clarence D. Vanderpool and Martin B. MacInnis, Towanda, Pa., assignors to GTE Sylvania Incorporated

No Drawing. Filed Nov. 15, 1973, Ser. No. 415,993

Int. Cl. C01f *5/28*

U.S. Cl. 423—490 **5 Claims**

1. A process suitable for producing crystalline magnesium fluoride comprising:

(a) forming a reaction mixture consisting essentially of ammonium bifluoride, an aqueous solution of ammonium hydroxide and magnesium carbonate, said ammonium bifluoride and ammonium hydroxide being in stoichiometric excess of said magnesium carbonate;

(b) heating the foregoing mixture at a temperature of at least about 60° C. for a time sufficient to form an intermediate solid complex;

(c) separating said complex from the aqueous phase;

(d) drying said complex at a temperature of at least about 100° C. and

(e) heating the dried complex to at least about 350° C. to form magnesium fluoride.

3,848,067

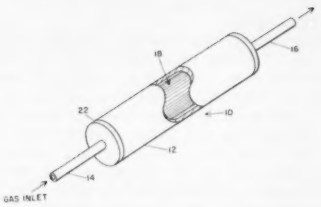
METHOD OF AND FILTER FOR REMOVING TRITIUM FROM INERT GASES

Martin H. Cooper, Monroeville, Pa., assignor to the United States of America as represented by the United States Atomic Energy Commission

Filed July 12, 1972, Ser. No. 270,884

Int. Cl. B01d *53/34;* **B01j** *11/22*

U.S. Cl. 423—248 **4 Claims**



1. A method of removing tritium from an inert gas comprising the step of passing said gas into contact with solid yttrium plated with nickel at a temperature within the range of 1000–1400° F., the latter to prevent interfering corrosion of said yttrium while permitting the tritium to diffuse through and react with said yttrium.

3,848,068

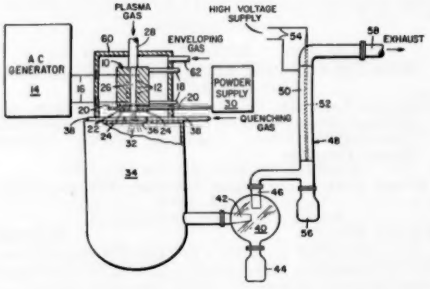
METHOD FOR PRODUCING METAL COMPOUNDS

Dale W. Rice, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Apr. 21, 1971, Ser. No. 135,973

Int. Cl. C01b *33/18;* **C01f** *7/02;* **C01g** *21/02, 23/04, 25/02, 27/02, 37/02, 49/06*

U.S. Cl. 423—335 **5 Claims**



1. A method for producing a particulate metal oxide comprising the steps of

providing an induction-coupled plasma torch,

introducing a plasma gas into said torch, said plasma gas containing up to 100 percent of oxygen on a free-element basis, the balance of said plasma gas being substantially inert with respect to said metal,

initiating a plasma stream,

introducing in particulate form into said plasma stream at least one metal selected from the group consisting

of chromium, lead, magnesium, niobium, silicon, titanium, zirconium, aluminum, and iron, said plasma stream having an enthalpy sufficient to vaporize said metal,

enveloping said plasma stream with a gas containing up to 100 percent of oxygen on a free-element basis, the balance of the enveloping gas being substantially inert with respect to said metal and the plasma gas,

vaporizing the metal particles,

reacting the metal vapors with said oxygen, the amount of oxygen present being at least sufficient for stoichiometric reaction with said metal,

quenching the resulting metal oxide in a stream of gas containing up to 100 percent of oxygen on a free-element basis, the balance of said quenching stream of gas being substantially inert with respect to said resulting metal oxide and said plasma gas, said resulting metal oxide being in finely divided form and being substantially free of any anionic impurity,

separating particles of said finely divided metal oxide up to about 0.5 μm. in size from said quenching stream, and

collecting said separated particles of said metal oxide.

3,848,069

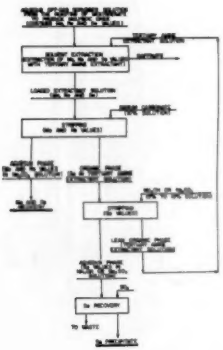
PROCESS FOR RECOVERING SELENIUM VALUES FROM AQUEOUS SOLUTIONS CONTAINING MOLYBDENUM, RHENIUM AND SELENIUM VALUES

Curtis D. Carey and Ronald N. Platzke, Salt Lake City, Utah, assignors to Kennecott Copper Corporation, New York, N.Y.

Filed Nov. 14, 1972, Ser. No. 306,210

Int. Cl. C01b *19/00;* **C22b** *49/00, 61/00*

U.S. Cl. 423—508 **6 Claims**



1. A process for recovering selenium values from an aqueous solution containing selenium, molybdenum, and rhenium values, comprising the steps of:

(a) Intimately contacting such an aqueous solution with a tertiary amine extractant solution to extract the selenium, molybdenum, and rhenium therefrom;

(b) Contacting the tertiary amine solution from step (a) with an aqueous solution containing an effective amount of sodium carbonate to selectively strip the molybdenum and rhenium values therefrom;

(c) Thereafter, contacting the stripped tertiary amine solution from step (b) with an aqueous stripping solution of ammonium hydroxide or sodium sulfite to strip the selenium values therefrom; and

(d) Recovering the selenium values from the aqueous stripping solution from step (c).

3,848,070

METHOD FOR PRODUCING CALCIUM SULFITE SEMIHYDRATE

Mitsuo Onozuka, Koki Nomoto, Kinji Iida, and Tomijiro Morita, Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo-to, Japan

Filed Oct. 3, 1972, Ser. No. 294,599

Claims priority, application Japan, Oct. 5, 1971, 46/78,126

Int. Cl. C01b *17/00*

U.S. Cl. 423—512 **2 Claims**

1. A method for producing calcium sulfite semihydrate in crystal form, in which the crystal has a size range of from 1 to 100 microns (a short axis of 1 to 30 microns, and a long axis of 5 to 100 microns), said method comprising the steps of preparing an aqueous mixture of acidic alkali metal sulfite and alkali metal sulfite, and adding to and reacting with said aqueous mixture calcium carbonate, while maintaining the following reaction conditions:

a. concentration of the alkali metal salt (molar ratio of acidic metal sulfite to alkali metal sulfite being in a range of from 0.1 to 5.0) percent by weight	2 to 30
b. pH value of the reaction system	5.5 to 7.8
c. reaction temperature ° C	40 to 80

3,848,071

PROCESS FOR REDUCING THE TOTAL SULFUR CONTENT OF CLAUS OFF-GASES

Willem Groenendaal, The Hague, Netherlands, assignor to Shell Oil Company, New York, N.Y.

No Drawing. Filed Mar. 9, 1972, Ser. No. 233,281

Claims priority, application Netherlands, Mar. 29, 1971, 7104155

Int. Cl. C01b *17/16*

U.S. Cl. 423—574 **10 Claims**

1. In a process for decreasing the total sulfur content of hydrogen sulfide and sulfur dioxide-containing off-gases from a Claus process wherein the Claus off-gases are passed with a hydrogen or carbon-monoxide-containing reducing gas over a metal catalyst whereby sulfur dioxide is reduced to hydrogen sulfide and the hydrogen sulfide is subsequently removed with the use of a hydrogen sulfide-selective adsorbent or absorbent, the improvement which comprises: adding hydrocarbon or carbon dioxide and air to the feed of said Claus process in an amount sufficient to form in the off-gas from said process substantially all of the reducing gas required to effect reduction of sulfur dioxide to hydrogen sulfide in the presence of said metal catalyst.

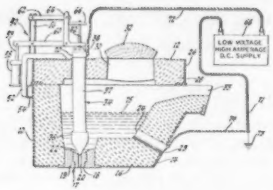
ERRATUM

For Class 424—333 see:
Patent No. 3,848,060

3,848,072
HEATED MOLTEN METAL POURING LADLE

Thomas L. Dershem, Defiance, and Charles F. Renn, Bryan, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

Filed May 8, 1972, Ser. No. 250,989
Int. Cl. F27d *3/14*
U.S. Cl. 13—20 **4 Claims**



1. A ladle comprising refractory walls including a base and a lid defining a substantially enclosed chamber for holding molten metal and having a bottom pour spout in said base,

a refractory stopper rod disposed within said chamber for partial immersion in said molten metal having a lower end for opening and closing said pouring spout and an upper end extending through said lid externally of said chamber and means for operating said stopper rod,

refractory electrode means sealingly extending through said ladle wall adapted for contacting the molten metal within said chamber,

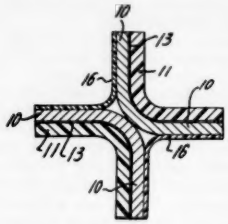
electrical contact means associated with said electrode and said stopper rod externally of said chamber for connecting said stopper rod in an electrical circuit, at least the portion of said stopper rod above said molten metal level containing carbon in amounts so that the stopper rod above the molten metal level is operative to function as an electrical resistance heater in said electrical circuit.

3,848,073
SHIELDING TAPES

Herbert D. Simons, Long Valley, N.J., and Frank E. Timmons, Richmond, Ind., assignors to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 323,950, Jan. 15, 1973. This application Aug. 20, 1973, Ser. No. 389,893
Int. Cl. H01b *11/06*
U.S. Cl. 174—36 **2 Claims**

1. A shielding tape comprising in combination (a) a thin elongated flexible film of material having relatively high electrical resistance insulation characteristics and (b) a thin elongated flexible foil of material having relatively low electrical resistance characteristics and having one surface thereof bonded to one surface of said film (a) and being coextensive therewith, said shielding tape being folded along a longitudinally extending crease, thereby to be doubled in thickness, said thin foil (b) having a thin layer of bonding material disposed on the surface thereof which is opposite to its said one

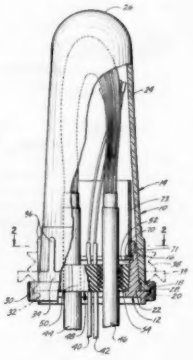


surface bonded to said film (a), whereby a foil-to-foil connection is made by said thin layer of bonding material.

3,848,074
TERMINAL AND SPLICE ENCLOSURE FOR CABLE INSTALLATIONS

William H. Channell, 122 Oak Tree Dr., Glendora, Calif. 91740

Filed Apr. 13, 1973, Ser. No. 351,106
Int. Cl. H02g *9/02*; **F16j** *15/10*
U.S. Cl. 174—38 **4 Claims**



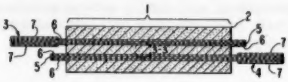
1. A cable terminal and splice enclosure comprising a housing having an opening, a terminal base removably secured in the opening in the housing, the terminal base having an elongated opening therethrough, a flexible grommet having openings therethrough for receiving the cables to be spliced, the grommet being seated in said elongated opening in the terminal base, locking means retaining the grommet in the elongated opening, and a flexible sealing ring, the housing having a lip around the opening therein and the base having a cooperating lip engaging the lip on the housing, the flexible sealing ring having a groove receiving the lip of the housing and lip of the base and thereby retaining the base in position and sealing the connection between the base and the housing.

3,848,075

METHOD FOR SPLICING COMPOUND SUPERCONDUCTORS

Jack A. Yoo, Sunnyvale, Calif., assignor to Varian Associates, Palo Alto, Calif.

Filed Dec. 27, 1971, Ser. No. 212,467
Int. Cl. H02g 15/08
U.S. Cl. 174—94 11 Claims



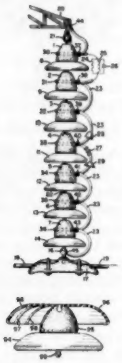
1. In a method for splicing high field compound superconductors the steps of, exposing surface portions of said superconductors to be spliced, assembling a layer of particulate material containing the constituent elements of a high field compound superconductor between said exposed surface portions to be spliced, and heating the assembly in the presence of an organic vapor to react the constituent elements of the compound superconductor to form a high field compound superconductive bridge between the member portions being spliced.

3,848,076

SUPPLEMENTAL INSULATION WITH BYPASS IMPEDANCE FOR ELECTRICAL LINES

Henry Greber, 225 W. 80th St., Apt. 8-D, New York, N.Y. 10024

Filed Dec. 17, 1973, Ser. No. 425,686
Int. Cl. H01b 17/48, 17/50
U.S. Cl. 174—141 R 4 Claims



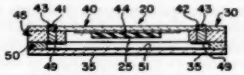
1. In combination, a metallic supporting structure, an insulator assembly consisting of metallic and insulating parts supported by said metallic supporting structure, and a conductor attached to said insulator assembly; a bypass impedance consecutively electrically connected to said metallic supporting structure, to all metallic parts of said insulator assembly, and to said conductor; and a portion of said metallic supporting structure as well as all of said metallic parts of said insulator assembly and a length of said conductor being covered with supplemental insulation, so that no electrical connection between any of said metallic supporting structure, said metallic parts of said insulator assembly, and said conductor exists, except through said bypass impedance.

3,848,077

PACKAGE FOR ELECTRONIC SEMICONDUCTOR DEVICES

Marcus E. Whitman, 482 Cheyenne Ln, San Jose, Calif. 95123

Filed Oct. 16, 1970, Ser. No. 81,310
Int. Cl. H05k 5/00
U.S. Cl. 174—52 S 3 Claims



1. A package for an electronic semiconductor device comprising:

a. a ceramic base with a metal pad on which the semiconductor device is seated with the terminals thereof at an elevated position;

b. first ceramic wall means on said base formed with a cavity therein for receiving the semiconductor device;

c. second ceramic wall means on said first ceramic wall means, said second ceramic wall means being formed with a cavity of greater dimension than said cavity of said first ceramic wall means, said second cermaic wall means being seated on said first ceramic wall means to form a shoulder on said first ceramic wall means;

d. metallic conductor tabs disposed on said shoulder of said first ceramic wall means, said metallic conductor tabs being directed transversely for establishing electrical connections with the terminals of the semiconductor device;

e. metallic conductors disposed perpendicularly to said transversely directed conductor tabs and extending through said first ceramic wall means and said base in contact with said conductor tabs respectively for establishing electrical connections between said conductor tabs respectively and electrical connections to said package; and

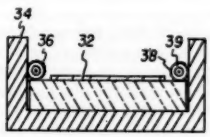
f. a cover hermetically sealed to said second ceramic wall means for encapsulating the semiconductor device within said package.

3,848,078

HYBRID ELECTRONIC CIRCUIT EMPLOYING MESHED SUPPORT

Joseph M. Guillot, Jr., Dallas, Tex., assignor to Collins Radio Company, Dallas, Tex.

Filed Sept. 12, 1973, Ser. No. 396,653
Int. Cl. H05k 5/00
U.S. Cl. 174—52 S 4 Claims



1. A hybrid electronic circuit comprising a ceramic substrate having a circuit pattern defined thereon and solder pads defined near peripheral portions thereof; a metal carrier including a cavity receiving said substrate and having solder pads defined on interior surfaces thereof; and meshed support means soldered to said solder pads of said substrate and to said solder pads of said carrier thereby physically attaching said substrate to said carrier within said cavity.

3,848,079

POINTED CIRCUITS WITH CRYSTALLIZED GLASS LOW K CROSSOVER DIELECTRICS

Rajnikant Babubhai Amin, Valencia, Calif., assignor to E. I. du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 262,491, June 14, 1972, Pat. No. 3,785,837. This application July 19, 1973, Ser. No. 380,600

Int. Cl. H05k *1/02*

U.S. Cl. 174—68.5 **3 Claims**

1. A dense, lead-free crossover dielectric interposed between two conductor patterns on a dielectric substrate, said crossover dielectric consisting essentially of 20–48 percent by weight crystals in a glassy matrix, said crystals consisting essentially of celsian as the major phase in addition to lesser amounts of sphene and zinc orthosilicate; said crossover dielectric being the fired product of a lead-free crystallizable glass composition consisting essentially of, by weight, approximately

25–40%	SiO_2
5–15%	TiO_2
7–12%	Al_2O_3
10–30%	BaO
10–20%	ZnO
2–10%	CaO
2–8%	B_2O_3
0–2%	MgO
0–4%	Bi_2O_3

the total of BaO and ZnO being 30–40 percent of the glass composition.

3,848,080

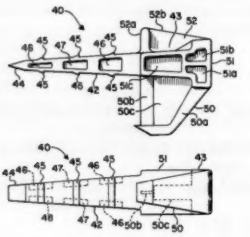
GROUND WIRE CLIP

Bradley J. Schmidt, East Dundee, Ill., assignor to Illinois Tool Works, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 394,691, Sept. 6, 1973, abandoned. This application Mar. 14, 1974, Ser. No. 451,326

Int. Cl. H01b *17/00*; **F16b** *15/02*, *15/06*

U.S. Cl. 174—164 **4 Claims**



1. A clip capable of being hammer-driven into a wooden pole to hold a ground wire against said pole, said clip comprising an integral elongated shank portion and a head portion of an electrically nonconductive plastic material, said shank portion being substantially rectangular in transverse cross-section and the side walls thereof tapering from said head portion to a chisel point at the other end thereof, a plurality of barbs on two opposite side walls of said shank portion, said barbs on each of said two opposite side walls arranged in a spaced apart relationship longitudinally of said shank portion and each of said barbs extending substantially completely transversely across said side walls, a plurality of recesses in the other two opposite side walls of said shank portion, said recesses arranged in a spaced apart relationship longitudinally of said shank portion and spanning said barbs to render at least the ends of said barbs deflectable inwardly of said shank portion, said head portion including a central driving section in axial alignment with said shank portion and a hook section and a stop section, said hook and stop sections arranged on opposite sides of said driving section and extending transversely outwardly of said clip, said stop section including a shoulder extending outwardly of said clip and terminating in a transverse plane substantially including the longitudinally inner end of said head portion and an integral web perpendicularly arranged between said shoulder and one side of said driving section, said hook section comprising a hook portion directed outwardly from the head end of said driving section and longitudinally of said driving section and frangible web means integrally interconnected between said driving section and said hook portion.

3,848,081

HOLLOW HIGH-VOLTAGE ELECTRIC INSULATOR

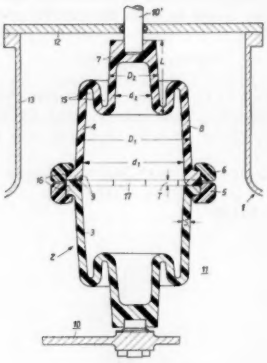
Willi Olsen, and Klaus Schlosser, both of Berlin, Germany, assignors to Siemens Aktiengesellschaft, Muchen, Germany

Continuation of Ser. No. 279,386, Aug. 10, 1972, abandoned. This application Nov. 19, 1973, Ser. No. 416,797

Claims priority, application Germany, Aug. 19, 1971, 2142119

Int. Cl. H01b *17/14*

U.S. Cl. 174—209 **5 Claims**



1. A hollow high-voltage electric insulator comprising a pair of shells made of electrically insulating material, each shell being symmetrical about its axis and formed by a wall having a thickness that is small as compared to the shell's cross-sectional extent; wherein the improvement comprises each shell being formed with two sections of substantially different cross-sectional extents with the section having the smaller of said extents partially projecting into the other of said sections for a portion of the latter's length and radially connecting therewith, the outer end of said section having the smaller cross-sectional extent being closed and formed for permitting connection therewith and the other of said sections on its outer end having a radially extending peripheral flange for permitting connection therewith, said pair of shells being interconnected with their said flanges together.

3,848,082

SYSTEM FOR TRANSMITTING AND UTILIZING SUPPLEMENTAL DATA VIA TELEVISION SYSTEMS

George D. Summers, Bethesda, Md., assignor to Atlantic Research Corporation, Alexandria, Va.

Filed Jan. 16, 1973, Ser. No. 324,166

Int. Cl. H04n *7/00*

U.S. Cl. 178—5.6 **13 Claims**

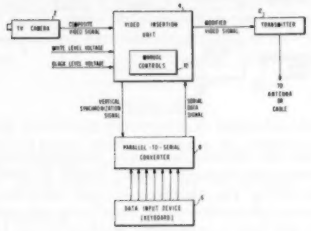
1. A system for transmitting and receiving a supplemental data signal with a normal video signal, said system comprising.

a. transmitter means for transmitting said supplemental data signal and said video signal as a modified video signal, said transmitter means comprising:

i. television camera means for producing said normal video signal in accordance with the image in the field of view of said camera means,

ii serial data generator means for generating said supplemental data signal in coded form,

iii video insertion means connected to said camera means and said data generator means for receiving said ordinary video signal and said coded supplemental data signal and for producing said modified video signal, and iv a transmitter for transmitting said modified video signal; and



b receiver means for receiving said modified video signal, said receiver means comprising:

i television receiver means for displaying said modified video signal such that said coded supplemental data signal occupies a portion of the field of said normal video signal,

ii optical transducer means for detecting said supplemental data signal;

iii decoding means connected to said optical transducer means for decoding said supplemental data signal, and iv output means coupled to said optical transducer means and said decoding means, for producing an output indicative of said supplemental data signal.

3,848,083

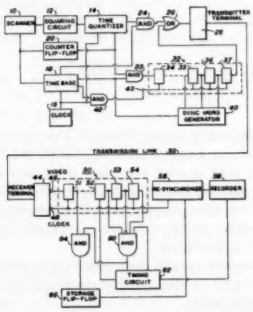
STAGGERED SCAN FACSIMILE

Stephen E. Townsend, Rochester, N.Y., assignor to Xerox Corporation, Rochester, N.Y.

Continuation of Ser. No. 423,061, Jan. 4, 1965, abandoned. This application Dec. 18, 1972, Ser. No. 316,309

Int. Cl. H04n *1/32*

U.S. Cl. 178—6 **17 Claims**



1. The method of transmitting visual information comprising forming a signal by serially sampling an attribute of an original image at a sequence of uniformly spaced sampling positions disposed in lines, and staggering said sampling positions from line to line, while retaining the serial relationship of said samples.

3,848,084

STORAGE TUBE CONTROL APPARATUS FOR A TELEPHONE IMAGE TRANSMISSION SYSTEM

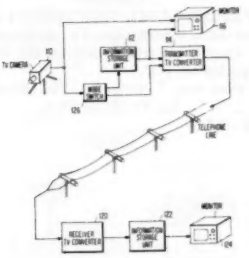
William E. Rodda, Trenton, N.J., and Denis Peter Dorsey, Levittown, Pa., assignors to RCA Corporation, New York, N.Y.

Filed Mar. 23, 1973, Ser. No. 344,067

Claims priority, application Great Britain, Apr. 24, 1972, 19022/72

Int. Cl. H04n *5/02, 7/12*

U.S. Cl. 178—6.8 **7 Claims**



1. In a telephone image transmission system of the type wherein a television camera, a display device and an audio communications link are interconnectable with a storage tube for transmitting television picture information signals representative of object images to a remote receiver location and in which said display device, said communications link and said storage tube are also interconnectable to reproduce television picture information signals representative of object images received by it from a remote transmitter location, the combination therewith of:

first means operative to intercouple the television camera, said storage tube and said audio communications link in the order named when said system is to transmit television picture information signals representative of object images;

second means for applying vertical deflection signals of a first scanning rate to said storage tube when said first means is operative to write said picture information signals into storage, and for applying vertical deflection signals of a second scanning rate to said storage tube when said first means is operative to read said picture information signals out of storage and onto said audio communications link;

third means operative to intercouple said audio communications link, said storage tube and said display device in the order named when said system is to reproduce television picture information signals representative of object images received by it from a remote transmitter location;

fourth means for applying vertical deflection signals of a third scanning rate to said storage tube when said third means is operative to write said picture information signals received along said audio communications link into storage, and for applying vertical deflection signals of a fourth scanning rate to said storage tube when said third means is operative to read said picture information signals out of storage for application to said display device;

fifth means operative to couple said storage tube with said television camera and said audio communications link when said system is to transmit television picture information signals representative of moving object images and to

decouple said storage tube from the interconnections between said television camera and said audio communications link when said system is to transmit television picture information signals representative of stationary object images;

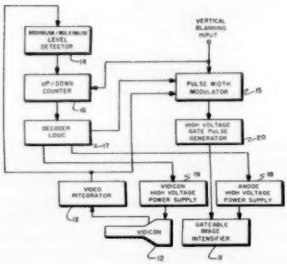
wherein said first and said fourth scanning rates are substantially equal, wherein said second means applies vertical deflection signals of a fifth scanning rate to said television camera when said fifth means is operative in the decoupling of said storage tube, and wherein said fourth means applies vertical deflection signals of a reduced scanning rate to said storage tube when said fifth means is operative in said decoupling mode to write said television picture information signals representative of stationary object images into storage at a rate substantially equal to said fifth scanning rate.

3,848,085

LOW LIGHT LEVEL TELEVISION CAMERA

Peter W. Van Atta, Woodbridge, Va., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Aug. 7, 1973, Ser. No. 386,485
Int. Cl. H04n *5/14*
U.S. Cl. 178—7.2 **6 Claims**



1. A low light-level television camera capable of operating over a wide range of input light levels and comprising:

a cascaded gateable image intensifier and vidicon;

means for generating an average signal level output from the vidicon;

means responsive to said vidicon average signal output for generating a stepped gain control corrective signal;

power supplies associated with said image intensifier and vidicon, said power supplies having means for providing stepped gain voltage change to the image intensifier and vidicon in response to said corrective signal, thereby providing wide range coarse gain control; and

means responsive to a signal indicative of said stepped voltage change and to the average signal level output for producing a variable pulse width signal input to said gateable image intensifier, whereby wide range fine gain control of said camera is obtained.

3,848,086

PICTURE INFORMATION DISPLAY DEVICE

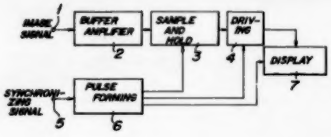
Hiroki Ikeda; Teruo Hirashima; Tetsuo Sakai; Soichi Iwamura; Iwao Ohishi, and Takashi Fujio; Takeo Kamegaya, all of Tokyo, Japan, assignors to Nippon Hoso Kyokai, Tokyo, Japan

Filed Sept. 12, 1972, Ser. No. 288,435
Claims priority, application Japan, July 17, 1971, 46-71729
Int. Cl. H04n *5/66*
U.S. Cl. 178—7.3 D **3 Claims**

1. A picture information display device comprising:

a gas discharge display device of a self-scanned panel display type having a separate display function and scanning function, said discharge display device not being provided with an inherent memory;

an analog sample and hold circuit including a plurality of sample and hold units, each said unit having a memory capacitor and an MOS transistor gate driven by an *n*-bit shift register having n output terminals which are integrated on a semiconductor substrate for sampling and holding a picture information signal, which includes half-tone of the picture, for each picture element;



a means for effecting luminance modulation of each line of said gas discharge display device by continuously controlling gas discharge current according to the picture information signal sampled by said analog sample and hold circuit corresponding to the respective picture element and stored in said memory capacitor for reproduction of said picture information signal; and

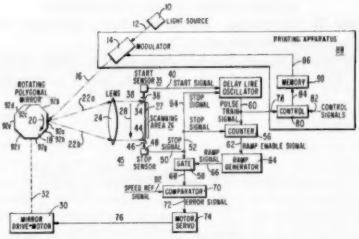
a means for reproducing said picture information signal from serial to parallel format by sequentially displaying said line of the gas discharge display device in line at a time format by use of said analog sample and hold circuit.

3,848,087

OPTICAL SCANNER CONTROL SYSTEM

Ross Michael Carrell, Cinnaminson, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Oct. 29, 1973, Ser. No. 410,564
Int. Cl. G08b *5/36*
U.S. Cl. 178—7.6 **7 Claims**



1. In a scanning system wherein a polygonal mirror is rotational driven by a motor to scan a reflected light beam across a scanning area having a leading edge and including optical signal processing means for processing signals manifesting optical information relating to said scanning light beam of the type operating under the control of timing signals the improvement comprising:

start detection means for producing a start signal when said light beam is deflected over said leading edge of said scanning area;

stop detection means for producing a stop signal when said light beam is deflected over a location after said beginning;

oscillator means responsive to said start signal and said stop signal for producing a pulse train signal starting when said start signal is received and ending when said stop signal is received;

said pulse train being coupled to said optical signal processing means to form said timing signals to thereby initiate the operation of said optical signal processing means;

means responsive to said pulse train signal for generating a ramp signal whose magnitude increases with time when a predetermined number of pulses in said pulse train signal have been received by said ramp generating means;

means responsive to said stop signal and said ramp signal for comparing said ramp signal to a predetermined reference signal when said stop signal is received to produce an error signal; and

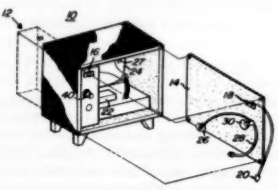
motor servo means responsive to said error signal and coupled to said motor for changing the speed of said motor in accordance with said error signal to null said error signal.

3,848,088

HIGH VOLTAGE CONNECTOR ARRANGEMENT

John Edward Bentz, Glendale Heights, Ill., assignor to Motorola, Inc., Chicago, Ill.

Filed Sept. 28, 1973, Ser. No. 401,763
Int. Cl. H01j *29/02*
U.S. Cl. 178—7.9 **8 Claims**



1. Electrical connector apparatus for making and breaking high voltage connection between elected circuit components, comprising in combination:

a funnel-shaped connector of insulating material having anti-corona means and resilient spring means mounted within the base thereof and forming a high voltage terminal point;

lead means attached to said high voltage terminal point; and an elongated circuit element for supplying high voltage to said terminal point, said element having a forward portion for engagement with said anti-corona means and compressing said spring means,

said circuit element further including a guide ring thereabout for making a sliding fit within said funnel-shaped connector body to effect self-alignment for said circuit element,

said compressed spring means providing less than zero extraction force for said elongated circuit element breaking high voltage connection.

3,848,089

APPARATUS AND METHOD FOR AUTOMATICALLY DIGITIZING LINE PATTERNS

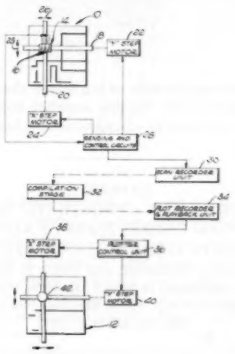
Richard F. Stewart, 13027 Sky Valley Rd., Los Angeles, Calif. 90049

Filed May 21, 1973, Ser. No. 362,393
Int. Cl. G08c *21/00*
U.S. Cl. 178—18 **12 Claims**

1. A method for automatically deriving digital signals representative of an orthogonal line pattern comprising:

sequentially scanning said line pattern with repetitive longitudinal scans in each orthogonal direction to sense the presence of line segments at selected longitudinal positions along at least three adjacent parallel scan paths simultaneously with each scan being transversely shifted relative to said line pattern in a predetermined indexing sequence to longitudinally scan each succeeding set of three adjacent parallel scan paths forming an orthogonal grid pattern overlying said line pattern;

separately detecting opposite ends of each line segment of said line pattern to generate a first detection signal only when a line segment is detected during each scan in coincident longitudinal positions in at least two adjacent scan paths but not in another path adjacent thereto on one side and to generate a second detection signal only when a line segment is detected during each scan in coincident longitudinal positions in at least two adjacent



scan paths but not in another path adjacent thereto on the side opposite said one side;

continuously maintaining first and second digital values indicative of the instantaneous longitudinal and transverse locations respectively of the successive positions being scanned in at least one of said scan paths; and

providing a set of digital information output signals indicative of said first and second digital values during each scan only when either of said first or second detection signals is generated and providing a first or second identification signal indicative of said first or second detection signal,

whereby said digital information output signals generated during scanning represent the orthogonal line pattern relative to said grid pattern.

3,848,090

WALL HANGING SPEAKER SYSTEM

Jeremiah Walker, 1540 S. Wilton Pl., Los Angeles, Calif. 90019

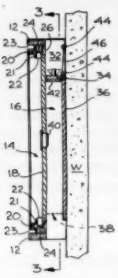
Filed Nov. 18, 1971, Ser. No. 199,867
Int. Cl. H04r *5/02*
U.S. Cl. 179—1 E **11 Claims**

1. A loudspeaker system, comprising in combination:

an acoustically sealed chamber in front of an acoustically open chamber and adjacent thereto;

at least one loudspeaker mounted partly in one chamber and partly in the other chamber and facing into said open chamber, the two chambers having a common partition wall mounting said loudspeaker, the open chamber having a wall opposite the partition wall which closes the rear side of the open chamber; and

a flexible acoustically sealed member covering the front side of said sealed chamber remote from the loudspeaker



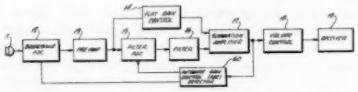
and on the opposite side of the sealed chamber from the open chamber, said flexible member being adapted to vibrate in response to vibrations of the loudspeaker.

3,848,091

METHOD OF FITTING A PROSTHETIC DEVICE FOR PROVIDING CORRECTIONS OF AUDITORY DEFICIENCIES IN AURALLY HANDICAPPED PERSONS

William P. Stearns, Scottsdale, and Barry S. Elpern, Phoenix, both of Ariz., assignors to John L. Holmes, Scottsdale, Ariz.

Filed Apr. 12, 1973, Ser. No. 350,377
Int. Cl. H04r *25/00*
U.S. Cl. 179—1 N **14 Claims**



1. A method of fitting a prosthetic device having a single filter and a flat gain control by-passing said filter for providing corrections of auditory deficiencies in an aurally handicapped subject comprising the steps of:

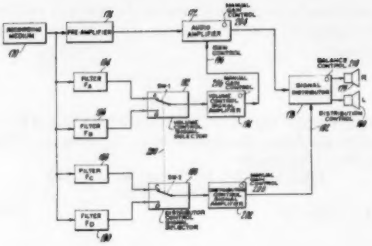
1. determining absolute threshold information over a predetermined audio range for a pure tone as a function of frequency;
2. determining information over a predetermined audio range for tone discomfort level of a pure tone as a function of frequency;
3. providing the subject with an output from a master prosthetic device including a general filter network over a general range of acuity deficiency of the subject as determined by the results of step 1 and step 2, said general filter network including a piurality of individual filter networks;
4. providing the subject with a choice as to the better perception of continuous discourse between discourse at the output of the master device when the master device is set at different individual filter networks;
5. determining the best individual filter network to provide corrections of auditory deficiencies in the aurally handicapped subject in response to the results of step 4, and
6. choosing the prosthetic device having a single filter with the said characteristics of said individual filter network.

3,848,092

SYSTEM FOR ELECTRONIC MODIFICATION OF SOUND

Ramzi A. Shamma, 610 W. 116th St., New York, N.Y. 10027

Continuation-in-part of Ser. No. 191,632, Oct. 22, 1971, abandoned, which is a continuation of Ser. No. 74,869, Sept. 23, 1970, abandoned, which is a continuation of Ser. No. 701,987, Jan. 31, 1968, abandoned. This application July 2, 1973, Ser. No. 375,366
Int. Cl. H04c *3/12*
U.S. Cl. 179—1 VL **8 Claims**



1. A system for modifying a sound program comprising means for providing an audio signal; means for amplifying said audio signal and presenting the same as an output signal; signal distributing means connected to said amplifying means for dividing said output signal into two parts; a first speaker connected to said signal distributing means for receiving one of said output signal parts; a second speaker spaced from said first speaker and connected to said signal distributing means for receiving the other of said output signal parts, said signal distributing means including means for increasing the relative amplitude of one of said parts while decreasing the relative amplitude of the other of said parts; said audio signal providing means comprising a recording medium having a program signal within the audio frequency range and a first control signal having a first frequency outside of the audio frequency range and having a first preselected and varying amplitude pattern corresponding to a first desired relative distribution of said output signal between said speakers, and a second control signal at a second frequency outside the audio frequency range and different than said first frequency and having a second preselected and varying amplitude pattern different than that of said first control signal and corresponding to a second desired relative distribution of said output signal between said speakers, said first and second control signals being superimposed on said program signal and recorded on a common recording path on said recording medium as said program signal; and means operatively interposed between said recording medium and said signal distributing means for separating said first and second control signals from said program signal and for coupling said control signals to said signal distributing means, said signal distributing means further including means for selectively applying only one of said first and second control signals to said amplitude decreasing and increasing means, said signal distributing means being responsive to the amplitude of said one of said control signals to vary the relative amplitudes of said parts of said output signal in accordance with the varying amplitude patterns of said one of said control signals, whereby a controlled shifting movement of the apparent sound between said first and second speakers is created.

3,848,093
APPARATUS AND METHOD FOR INCREASING THE TRANSMISSION CAPACITY OF A TIME DIVISION SYNCHRONOUS SATELLITE TELECOMMUNICATION SYSTEM

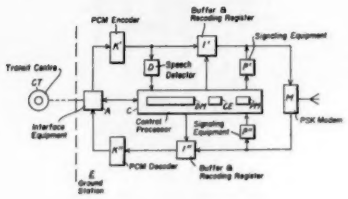
Nils Herbert Edstrom, Stockholm, Sweden, assignor to Telefonaktiebolaget L M Ericsson, Stockholm, Sweden

Filed Feb. 28, 1973, Ser. No. 336,402

Claims priority, application Sweden, Mar. 22, 1972, 3661/72

Int. Cl. H04j *5/00*

U.S. Cl. 179—15 AS **2 Claims**



1. In a time division synchronous satellite telecommunication system having a satellite transponder, a plurality interruptions, ground stations, a plurality of international transit centers each connected to one of the ground stations, speech signal communication between international transit centers taking place during time slots allocated from a plurality of time slots, each of the ground stations having a control processor, all of the control processors being in continuous connection with each other and continuously assigning time slots from a first subset of the plurality of time slots to at least some of the ground stations in response to their varying demands for transmission capacity and for assigning to each of the ground stations a fixed number of time slots from a second subset of the plurality of time slots regardless of the demands for transmission capacity, each of the ground stations of a subset of the ground stations having transmission apparatus which includes means for detecting temporary interruptions in the receipt of speech signals from its associated international transit center which is assigned a time slot from the second subset and, during such temporary interrutions, transmitting during the related time slots such speech signals from its associated international transit center which are waiting for transmission service, the method of increasing the transmission capacity of such a system comprising the steps of periodically determining in at least one of the ground stations the number of time slots from the first subset available for assignment, when the number is less than a first value initiating a frozen state of the system wherein the continuous assignment of time slots is interrupted and the ground stations of the subset of ground stations upon temporary interruptions in the receipt of speech signals from their associated international transit centers transmit during the associated time slots from the first as well as from the second subset such speech signals from their associated international transit centers which are waiting for transmission service, and when the number of free time slots changes from the first value to a second and greater value reverting the state of the system to the normal state wherein the continuous assignment of time slots is carried out.

3,848,094
TELEPHONE BATTERY FEED CIRCUIT

Stanley L. Russell, Webster, N.Y., assignor to Stromberg-Carlson Corporation, Rochester, N.Y.

Filed Dec. 29, 1972, Ser. No. 319,243

Int. Cl. H04m *3/22*

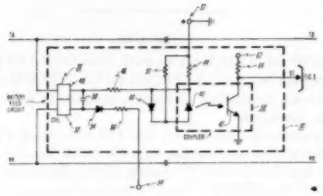
U.S. Cl. 179—18 FA **11 Claims**

1. A battery feed circuit for connection by telephone switching equipment to a telephone set for providing power thereto and for detecting supervisory signals therefrom, said battery feed comprising:

a first pair of terminals for connection to a direct current power supply;

a second pair of terminals for connection to the telephone switching equipment;

a semiconductor device including an input circuit having a radiation source that generates photon radiation, the intensity of which is a function of current flow therethrough, and an output circuit having a radiation sensitive device, the impedance of which is a function of the intensity of the radiation from said source, said input and output circuit being electrically isolated;



impedance means, having a direct current path therethrough, and exhibiting a substantially higher impedance to audio frequency current than to direct current, for blocking audio current to said first pair of terminals;

direct current circuit means for connecting said first pair of terminals to said second pair of terminals through said impedance means to provide a direct current path therebetween, and

said input circuit being connected between said impedance means and said first pair of terminals so that said semiconductor device provides signals indicating the conductive and non-conductive conditions of said direct current path.

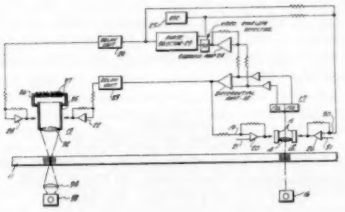
3,848,095
THREE DIMENSIONAL ELECTRO-OPTICAL RETRIEVAL SYSTEM

Peter G. Wohlmut, Palo Alto, and Frank D. Neu, Castro Valley, both of Calif., assignors to I/O Metrics Corporation, Sunnyvale, Calif.

Filed Dec. 20, 1972, Ser. No. 316,661

Int. Cl. G11b *7/08, 21/10*

U.S. Cl. 179—100.3 V **20 Claims**



1. A three dimensional electro-optical retrieval system for retrieval of information from any one of a plurality of layers of a recording media comprising;

means for receiving a multi-layered recording media having information on a track on at least one of a plurality of layers;

a first adjustable electro-optical system;

first means for electro-optically positioning said first adjustable electro-optical system relative to the lateral and normal locations of the desired information;

a second adjustable electro-optical system;

second means for electro-optically positioning said second adjustable electro-optical system, after a predetermined delay, relative to the lateral and normal locations of the desired information in response to said first means, said second adjustable electro-optical system capable of electro-optically sensing the desired information; and

means for driving the desired information location of the recording media in the desired track direction past said first adjustable electro-optical system at a first time and past said second adjustable electro-optical system the predetermined delay after the first time.

3,848,096

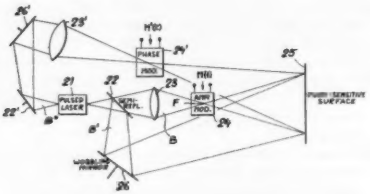
METHOD OF AND MEANS FOR HOLOGRAPHICALLY RECORDING AND REPRODUCING INFORMATION

Hans Marko, Grafelfing, Germany, assignor to Krone GmbH, Berlin, Germany

Continuation-in-part of Ser. No. 133,134, April 12, 1971, abandoned. This application Aug. 10, 1973, Ser. No. 387,283

Int. Cl. G11b *7/00;* **G02b** *27/00;* **H04n** *5/84*

U.S. Cl. 179—100.3 G **16 Claims**



1. A method of holographically recording and reproducing information, comprising the steps of:

projecting upon a photographic surface and defocused beam of coherent light carrying photographically recordable information;

superimposing upon said beam a first bundle of reference light rays trained upon said surface, said light rays and said beam having the same wavelength and being pulsed in step with each other;

subjecting said bundle to modulation varying with time as an orthogonal function;

developing the resulting latent image on said surface; and

detecting said information by illuminating the developed image on said surface by a second bundle of reference light rays of the wavelength of said first bundle and subjected to modulation varying as the same orthogonal function of time.

3,848,097

TELEPHONE WALL MOUNT

Council A. Tucker, Los Angeles, Calif., assignor to American Telecommunications Corporation, El Monte, Calif.

Filed Apr. 9, 1973, Ser. No. 348,955

Int. Cl. H04m *1/11*

U.S. Cl. 179—146 R **12 Claims**

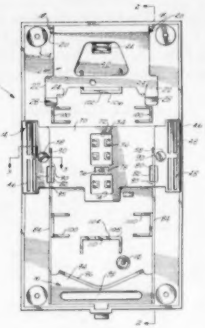
1. An improved wall mount to mount a telephone on a wall and connect the telephone to a telephone outlet on the wall, the outlet having a jack and a magnetic striker plate, the mount comprising:

a. a base having a face adapted to mount a wall telephone;

b. means in the base for mounting a plug for the electrical connection of the telephone with the jack of the telephone outlet;

c. magnet means in the base to rigidly attach the base to the magnet striker plate of the outlet;

d. guide means in the base to cooperate with the outlet for horizontally and vertically positioning the mount during its installation on the outlet;



e. means for transferring the weight of the wall mount and telephone to the outlet; and

f. means for removing the mount from the outlet.

3,848,098

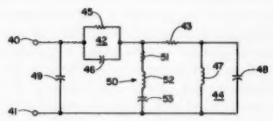
TELEPHONE HYBRID TRANSFORMER BALANCE NETWORK

John Fowler Pinel, Kanata, Ontario, Canada, assignor to Bell-Northern Research Ltd., Ottawa, Ontario, Canada

Filed Dec. 13, 1973, Ser. No. 424,277

Int. Cl. H04b *1/52*

U.S. Cl. 179—170 D **4 Claims**



1. In a balance network for a telephone two-wire to four-wire hybrid transformer having its two-wire port connected to an inductively loaded telephone line, said network comprising:

a series connected combination of:

a first network including a resistor and capacitor connected in shunt for low audio frequency shaping, a resistor approximating in combination the resistance of the telephone line near end section, and a third network including an inductor and capacitor connected in shunt for high audio-frequency shaping; and

a capacitor connected in shunt with said series connected combination to approximate in combination the capacitance of said telephone line;

the improvement comprising:

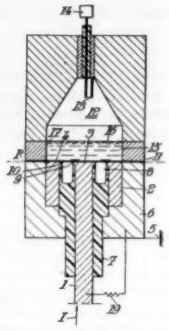
a series resonant inductor-capacitor-resistor connected in shunt with the series combination of said resistor and said shunt resonant inductor-capacitor, and coacting with the balance of the network components to provide an improved impedance match with the telephone line at low audio frequencies.

3,848,099

CIRCUIT BREAKERS FOR HEAVY CURRENTS

Rioux Christian, Antony, and Damidau Francoise, Cachan, both of France, assignors to Agence Nationale De Valorisation De La Recherche (Anvar), Paris, France

Filed May 31, 1972, Ser. No. 258,448
Claims priority, application France, June 3, 1971, 71.20225
Int. Cl. H01h *35/00*
U.S. Cl. 200—61.08 13 Claims



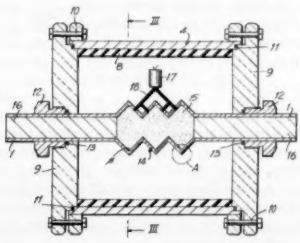
1. Rapid circuit breaker for a heavy electric current comprising: two parallel conductors one of which surrounds the other, connected respectively to two portions forming the conducting line to be broken and having both one axial end in a same transverse plane P, an insulating sleeve interposed radially between these two elements and hollowed on this side of the plane P by an annular cup open in the direction of this plane, a conducting plate applied on the concentric terminal bearing surfaces, of the two conducting elements, situated in the plane P, and means for suddenly generating a high pressure on the outer surface of the plate at the desired moment for breaking the current so as to cut out or burst this plate annularly between the two conductor elements and project the cut out or burst portion towards the bottom of the cup.

3,848,100

EXPLOSIVE CIRCUIT-BREAKER

Konstantin Isaakovich Kozorezov, Universitetsky prospekt, 1, korpus 1, kv. 29; Vitaly Vasilievich Semchenko, ulitsa 26 Bakinskikh Komissarov, 8, korpus 3, kv. 32, and Georgy Ivanovich Mikhailu, ulitsa Volgina, 23, korpus 1, kv. 52, all of Moscow, U.S.S.R.

Filed Sept. 10, 1973, Ser. No. 396,127
Int. Cl. H01h *39/00*
U.S. Cl. 200—61.08 1 Claim



1. An explosive circuit-breaker comprising, in combination: a housing made from a strong material, a hollow conductor passing inside and insulated from said housing, an explosive charge disposed inside said conductor within its section located inside said housing to break said conductor and a detonator to activate the explosive charge, wherein the destructible section of the conductor is made in the form of a corrugated tube and the insulation housing is essentially hermetic with an evacuated inner space, the residual pressure P (mm Hg) and the dimensions of the housing and of the conductor complying with the following relationships:

$$P \quad 0.05/(R_1-R_2) \text{ and } R_1 \quad 3R_2,$$

where

R_1 — inner radius of the insulation housing, centimeters;

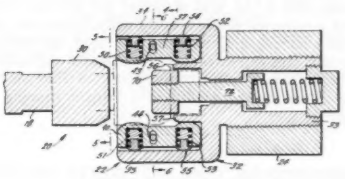
R_2 — outer radius of the destructible section of the conductor, centimeters.

3,848,101

ELONGATED JAW CONTACT FOR OIL CIRCUIT BREAKER DISCONNECT CONTACT

Elmer T. Eberhard, Tahoe City, and Henry G. Meier, Glendale, both of Calif., assignors to I-T-E Imperial Corporation, Philadelphia, Pa.

Filed Sept. 26, 1969, Ser. No. 861,300
Int. Cl. H01h *33/68*
U.S. Cl. 200—150 R 6 Claims

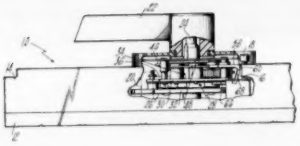


1. A contact structure for a circuit interrupter; said circuit interrupter comprising an oil circuit breaker having: first and second interrupter structures, first and second elongated movable contacts movable along the axes of said first and second interrupter structures, respectively, and between interrupter contact open and closed positions, a conductive cross-bar, first and second isolation contact means on said conductive cross-bar movable between engagement and disengagement with respect to the bottom of said first and second elongated movable contacts, respectively, an oil-filled tank for receiving said first and second interrupter structures, and operating means for moving said cross-bar and said first and second elongated movable contacts along said axes of said first and second interrupter structures; the improvement which comprises the construction of at least said first isolation contact means to permit lateral movement of said bottom of said first elongated contact while maintaining contact with said first isolation contact means responsive to lateral movement of at least one of said first or second interrupter structures in the plane formed by the axes of said interrupter structures; said first isolation contact means comprising a jaw-type contact having opposing elongated contact surfaces disposed in spaced parallel planes which each extend in said lateral direction and receiving side surfaces adjacent said bottom of said first elongated contact between said opposing surfaces and in high pressure sliding contact; said bottom of said first elongated contact being laterally slidable within said jaw-type contact.

3,848,102
ELECTRIC CIRCUIT BREAKER WITH AUXILIARY TRIP MECHANISM

Charles L. Jencks, Avon, and Frank H. Murphy, West Hartford, both of Conn., assignors to General Electric Company, New York, N.Y.

Filed July 30, 1973, Ser. No. 383,554
Int. Cl. H01h *3/32*
U.S. Cl. 200—153 L **10 Claims**

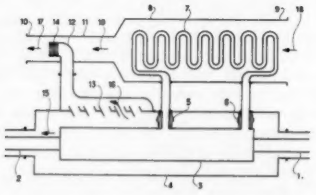


1. In an electric circuit breaker having a circuit closing mechanism including a cam movable along a predetermined path to effect a closed circuit condition across the breaker, drive means movable in opposite pivotal directions and operatively connected to the cam upon movement in one direction to drive the cam in said one direction along said path, and a tripping mechanism including a manual trip actuator for opening the circuit controlled by the breaker, the combination including an auxiliary trip actuating mechanism operatively associated with said drive means for operating the tripping mechanism comprising a trip drive member connected to said drive means for conjunctive movement in opposite pivotal directions and a trip arm mounted for pivotal movement between a retracted position and a tripping position, the trip drive member engaging said trip arm upon movement with said drive means in a direction opposite said one direction to drive the trip arm toward it tripping position when the breaker is in a closed circuit condition to initiate tripping of the breaker.

3,848,103
THERMO-SIPHONIC COOLING CIRCUIT AND CIRCUIT BREAKER

Edmond Thuries, Pusignan, France, assignor to Delle-Alsthom, Villeurbanne, France

Filed Sept. 7, 1973, Ser. No. 395,115
Claims priority, application France, Sept. 8, 1972, 72.31901
Int. Cl. H01h *1/62, 1/64*
U.S. Cl. 200—289 **4 Claims**



1. In a power station switch having a high rated current and which comprises:

a closed cut-out chamber containing a gas under pressure, said chamber being situated within a protective casing with a first cooling air flow passing between said chamber and said casing to provide for cooling of said chamber,

a radiator type heat exchanger external to said casing and in closed fluid loop connection with said chamber for circulating said gas under pressure therebetween,

an enclosure surrounding said radiator type heat exchanger and defining with said heat exchanger a second cooling air flow path passing therethrough and across said heat exchanger to remove heat therefrom, the improvement comprising:

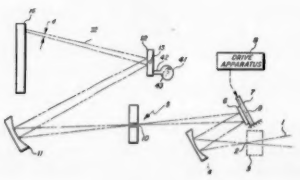
means for drawing off a portion of said first air flow from said casing, downstream of the initial contact area of said first cooling air flow with said chamber and after heating thereof, and

means for using the heated drawn off air for setting in motion a second air flow within said second cooling air flow path, around said radiator type heat exchanger.

3,848,104
APPARATUS FOR HEAT TREATING A SURFACE

Edward V. Locke, Rockport, Mass., assignor to Avco Everett Research Laboratory, Inc., Everett, Mass.

Filed Apr. 9, 1973, Ser. No. 349,419
Int. Cl. B23k *9/00*; **H01s** *3/00*
U.S. Cl. 219—121 L **12 Claims**



1. In a laser system, means for changing the intensity profile across an output laser beam to a different controlled intensity profile comprising:

a. reflective means for receiving and reflecting an output laser beam having a given intensity profile;

b. means for spacially oscillating said reflective means over a given reflector spacial path at a predetermined rate whereby an output laser beam reflected by said reflecting means is spacially oscillated over a laser beam path; and

c. means having a blocking aperture for blocking at least a portion of said spacially oscillated laser beam whereby the average radiation intensity at points along the unblocked portion of said laser beam path of said spacially oscillated laser beam exiting from said aperture define said controlled intensity profile.

3,848,105
COOKING TIME ADJUSTING ARRANGEMENT FOR USE IN ELECTRONIC OVEN

Fumiko Mori, Osaka, Japan, assignor to Matsushita Electric Industrial Co. Ltd., Osaka, Japan

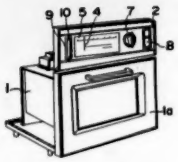
Filed Apr. 2, 1973, Ser. No. 346,795
Claims priority, application Japan, Apr. 6, 1972, 47-41112[U]; Apr. 6, 1972, 47-41113[U]
Int. Cl. H05b *9/06*
U.S. Cl. 219—10.55 **22 Claims**

1. A cooking time adjusting arrangement for use in an electronic oven, said arrangement being utilized in an electronic oven including an oven-defining structure having an access opening, means positioned for generating high frequency energy toward the interior of said oven-defining structure and a hingedly supported door for selectively covering the access opening of said oven-defining structure, said adjusting arrangement comprising:

a timer device having an operating shaft for setting the timer to any desired operating period, said means for generating high frequency energy being operatively coupled to

said timer device and operating during said operation period;

an instrument panel having a front and back and positioned on said oven-defining structure and having a window portion and an aperture therein, said timer device being positioned adjacent the back of said panel and said operating shaft of said timer extending through said aperture; a movable pointer needle, operatively coupled to said operating shaft and positioned to move along said window



portion for indicating the operating time of said means for generating high frequency energy; and

display means positioned behind said window portion for visually representing various information relating to menus, corresponding cooking times and operating time, said display means comprised of a rotatable drum, the peripheral surface thereof having said information thereon.

3,848,106

APPARATUS FOR HEATING BY MICROWAVE ENERGY

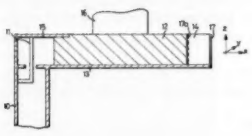
Benny Berggren, Spanga; Goran Boling, Taby, both of Sweden, and Marshall N. Dickler, assignors to Stiftelsen Institutet for mikrovagsteknik vid Tekniska Hogskolan 1 Stockholn, Stockholm, Sweden

Filed May 23, 1973, Ser. No. 362,912

Claims priority, application Sweden, May 29, 1972, 7014/72

Int. Cl. H05b *9/06*

U.S. Cl. 219—10.55 **9 Claims**



1. An apparatus for heating material by microwave energy comprising, a distribution element for receiving the microwave energy and coupling the microwave energy to the material to be heated, said distribution element including a dielectric material having low energy losses and having a dielectric constant exceeding the dielectric constant of air, said dielectric material having a substantially constant cross-sectional thickness at successive points therealong in the direction of propagation of the microwave energy therethrough, said dielectric material further having a thickness for maintaining the phase velocity of said microwave energy therethrough lower than the velocity of light in air, and having a thickness range for maintaining only the basic resonant mode of microwave energy in said dielectric material whereby the microwave energy will be concentrated within and adjacent to said dielectric material, in the immediate vicinity of the material to be heated.

3,848,107

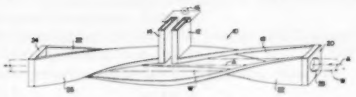
INDUCTOR FOR HEATING ELONGATED METAL WORKPIECES

John C. Lewis, Wentworth, Ontario, Canada, assignor to Park-Ohio Industries, Inc., Cleveland, Ohio

Filed Dec. 26, 1973, Ser. No. 428,413

Int. Cl. H05b *5/08*

U.S. Cl. 219—10.79 **13 Claims**



1. An inductor for inductively heating an elongated metal workpiece having an axis, said inductor having an axis of orientation coinciding with the axis of a workpiece disposed in magnetically coupled relationship therewith, said inductor comprising a continuous conductor having opposite ends connectable across a source of alternating current, and said conductor including first and second helical portions extending about said axis of orientation, said helical portions being of the same hand of lay and substantially diametrically opposed with respect to said axis of orientation.

3,848,108

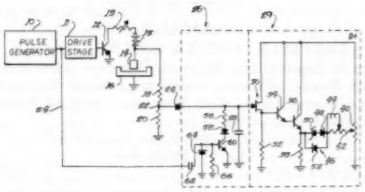
SERVO FEED CONTROL FOR ELECTRICAL DISCHARGE MACHINING

Eiichi Takarada, Rockford, Ill., assignor to Amsted Industries Incorporated, Chicago, Ill.

Filed Nov. 1, 1973, Ser. No. 411,684

Int. Cl. B23k *9/16*

U.S. Cl. 219—69 G **4 Claims**



1. In an electrical discharge machining apparatus having pulsing means for delivering intermittent erosive electrical discharges across a dielectric coolant-filled gap between a tool electrode and a workpiece, and further having feed control means for providing relative movement between said electrode and said workpiece; the improvement comprising a servo feed control circuit having an energy storage network connected across said gap, said energy storage network including means for storing a voltage that is proportional to the peak voltage imposed across said gap, and control circuitry for causing said feed control means to operate in response to said stored voltage, said energy storage network further including means for discharging said storage means in response to the output of said pulsing means, thereby discharging said storage means prior to the imposition of the next machining pulse across said gap.

3,848,109
ARC WELDING PROCESS AND ELECTRODE FOR STAINLESS STEEL

Albert J. Zvanut, Whittier, Calif., assignor to Stoody Company, Santa Fe Springs, Calif.

Continuation of Ser. No. 119,642, March 1, 1971, abandoned, which is a division of Ser. No. 879,045, Nov. 24, 1969, Pat. No. 3,585,352, which is a continuation-in-part of Ser. No. 777,405, Nov. 20, 1968, abandoned. This application Feb. 26, 1973, Ser. No. 335,977

Int. Cl. B23k *35/22*

U.S. Cl. 219—146 **3 Claims**

1. A tubular composite self-shielded arc welding electrode comprising a metallic outer sheath and a core within and enclosed by the sheath, the electrode containing chromium and nickel in sum in an amount equal to at least 29.3 weight percent of the weight of the electrode whereby to produce a high-alloy deposit of chromium-nickel stainless steel, the core comprising 16.67 percent to 60 percent of the electrode weight and consisting essentially of the following listed components in the specified weight percentages of the electrode: from about 1 percent to about 7 percent of a slag forming material including a slag-forming first component and a derivative of a metal having an oxide form when molten different from said first component and soluble in the slag, from 1.0–2.67 percent of calcium fluoride, 1.5 percent manganese, from 1.1 to 2 percent silicon, and from 10 to 30 percent of other metal-bearing materials selected from the group consisting of metals, metal alloys and ferroalloys.

3,848,110
PORTABLE ELECTRIC GRILL APPLIANCE

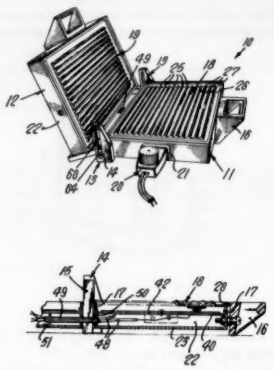
Andre N. Giguere, and Rheal A. Thibodeau, both of Beauceville, Quebec, Canada, assignors to Marie Martle Poulin Giguere and Agathe Cote Thibodeau, both of Beauceville, Quebec, Canada

Filed July 25, 1973, Ser. No. 382,317

Int. Cl. H05b *3/06*

U.S. Cl. 219—525 **10 Claims**

1. A portable electric grill appliance comprising a lower and upper grill chassis, each said grill chassis having a bottom wall, side walls about said bottom wall and a grill plate of heat conductive material defining an upper wall; a resistive heating element secured within a channel provided on the underface of said grill plate of each said chassis whereby a substantial portion of said heating element will be encased in said grill plate to minimize heat radiation in the area between said chassis bottom wall and said grill plate, a hinge connecting said lower and upper chassis along one of their side walls to permit said upper chassis to be displaced through an arc from a position where both said grill plates lie side-by-side in a common horizontal plane to a further position where both said grill plates face each other in substantial juxtaposition to a further position where at least the lower grill plate is accessible, said hinge having a channel member secured to each end walls of said bottom chassis adjacent the end edge of a side wall and extending above said lower chassis grill plate, an elongated connector member secured to a side wall of said upper chassis near each end edge thereof and extending above said upper chassis grill plate to define a connecting end, said channel members and said connector members extending above said lower and upper chassis bottom wall to constitute support legs, a further leg secured to each said lower and upper chassis and located centrally of the side wall remote from the hinge, said support legs and further leg supporting the bottom wall of each said chassis above a common horizontal plane, and support means for supporting each said chassis bottom wall above said common horizontal plane when resting thereon.



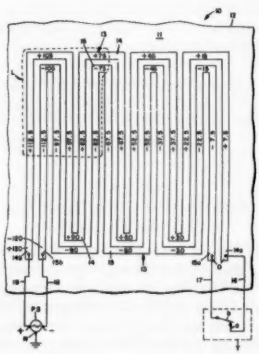
3,848,111
ELECTRICAL HEATING UNIT

Harold A. Brouneus, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Sept. 24, 1973, Ser. No. 400,217

Int. Cl. H05b *3/16, 3/74*

U.S. Cl. 219—543 **6 Claims**



1. An electrical heating unit comprising;

A. a panel of a glassy material,

B. a 240 volt heating element including a pair of first and second electrical resistance conductors in physical contact with a surface of said panel in a selected area of such panel and extending over such surface in first and second sinuous paths paralleling each other throughout the lengths thereof,

C. first circuit means including a single set of normally closed and thermally actuated contacts for connecting first adjacent ends of said conductors with each other, and

D. second circuit means for connecting the second adjacent ends of said first and second conductors with first and second opposite terminals, respectively, of a commercial 240 volt source of alternating current.

3,848,112

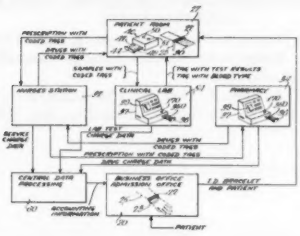
IDENTIFICATION SYSTEM

Theodore E. Weichselbaum, St. Louis, and Jack L. Wilhelmson, Fenton, both of Mo., assignors to Sherwood Medical Industries Inc., St. Louis, Mo.

Division of Ser. No. 94,452, Dec. 2, 1970,. This application Sept. 11, 1972, Ser. No. 287,925

Int. Cl. G06k *5/00, 7/08*

U.S. Cl. 235—61.7 R **2 Claims**



1. In an identification system for relating items with patients, cross-check means for insuring that an identifying item corresponds to an identified patient, comprising:

first identification tag means adapted to be dispensed from bracelet means attached to a single patient;

said first identification tag means carrying thereon magnetic means having a plurality of magnetic fields arranged to form a unique magnetic code for identifying a single patient;

second identification tag means adapted to be dispensed from the bracelet means and carrying thereon magnetic means having a plurality of magentic fields corresponding to the plurality of magnetic fields carried by said first identification tag means to form the unique magnetic code thereon;

means for removably attaching said second identification tag means to an item which is to be associated with said single patient;

and reader means for comparing the unique codes of said first and second identification tag means comprising plate means mounted for movement along a predetermined path between first and second positions, first and second input receptacles for respectively receiving said first and second identification tag means, said receptacles being disposed on said plate means for simultaneous movement therewith, first and second magnetic read heads disposed adjacent said path for respective association with said first and second input receptacles, energy storage means coupled to said plate means for storing energy in response to movement of said plate means from said first position to said second position, said plate means being movable from said second position to said first position by the energy stored in said storage means for moving said first and second identification tag means relative to said first and second read heads to produce a first series of signals corresponding to the unique magnetic code of said first identification tag means and a second series of signals corresponding to the unique magnetic code of said second identification tag means, circuitry means responsive to said first and second series of signals for producing a signal comparison, and means responsive to said signal comparison to provide a match indication when the magnetic codes of said first and second identification tag means are identical.

3,848,113

APPARATUS AND METHOD FOR TRANSFERRING A VALUE FROM A COUNTER AND FOR CLEARING THE COUNTER

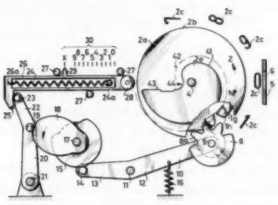
Heinz Kelch, Buchenberg, and Helmuth Mueller, St. Georgen, both of Germany, assignors to Kienzle Apparate G.m.b.H., Villingen/Schuartuald, Germany

Continuation of Ser. No. 309,508, Nov. 24, 1972, abandoned. This application Aug. 30, 1973, Ser. No. 393,142

Claims priority, application Germany, Nov. 24, 1971, 2158111

Int. Cl. G06c *15/42*

U.S. Cl. 235—61 PD **18 Claims**



1. Apparatus for transferring a value from a counter and for clearing the counter, comprising an ordinal series of counter wheels rotatable about an axis; a cam connected with each counter wheel for movement therewith and having a cam track with successive analog cam track portions representing the digital angular positions of the respective counter wheel, respectively, and decreasing in one direction; sensing means for each cam, biassed toward the respective cam track; control means for simultaneously retracting said sensing means to a position of rest, and for releasing said sensing means for biassed movement to a value transfer position abutting and pressing against the cam track portion representing a value stored in the respective counter wheel so that the respective cam is urged to move in said one direction to a clearing position; value representing means operated by each sensing means in said value transfer position to represent the value sensed by said sensing means in said value transfer position; and blocking means for blocking rotation of each counter wheel, and controlled by said control means to release said counter wheels after operation of said value representing means so that said biassed sensing means move said cams to said clearing position in which said counter wheels are cleared.

3,848,114

CONTROL SYSTEM FOR PROVIDING A SPIRAL FLIGHT PATH TO A RADIO BEACON

Curtis M. Campbell, Phoenix, and Ronald J. Miller, Glendale, both of Ariz., assignors to Sperry Rand Corporation, New York, N.Y.

Filed Jan. 12, 1972, Ser. No. 217,617

Int. Cl. G06g *7/78*

U.S. Cl. 235—150.26 **7 Claims**

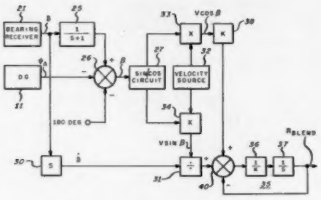
1. A flight control system for guiding an aircraft having a heading command system along a predetermined curved flight path to a position marked by a radio transmitter comprising

relative bearing receiver means responsive to said radio transmitter output for providing a signal proportional to the bearing of said aircraft to said position.

bias signal means which provides a signal proportional to a desired value of bearing between said aircraft and said position,

direction sensing means for providing a signal proportional to the heading of said aircraft with respect to a specific reference direction,

first summation means coupled to said receiver means and said bias signal means for providing a difference relative bearing signal,



second summation means coupled to said first summation means and said direction sensing means for providing a heading output signal which is a function of said difference relative bearing signal,

integrating means coupled to said first summation means for producing a leading relative bearing signal,

third summation measn coupled to said integrating means and said second summation means for providing an output heading reference signal, and

means supplying said heading reference signal to said heading command system.

3,848,115

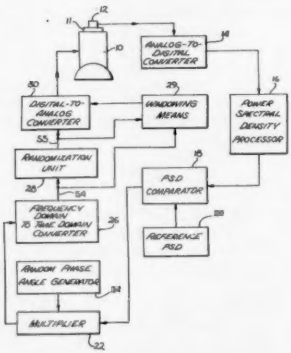
VIBRATION CONTROL SYSTEM

Edwin A. Sloane, and Charles L. Heizman, both of Los Altos, Calif., assignors to Time/Date Corporation, Palo Alto, Calif.

Filed Oct. 19, 1973, Ser. No. 408,181

Int. Cl. G01n *29/00*; G06f *15/34*

U.S. Cl. 235—151 **15 Claims**



1. A vibration control system for generating a control signal comprising:

sensing means for sensing the movement of a specimen;

a first converting means for converting at least one frame of information from said sensing means to the frequency domain;

comparator means for comparing said converted frame of information with a predetermined spectrum and for providing a comparison frame of data representative of said comparison, coupled to said first converting means;

a generator for generating a random signal;

combining means for combining said random signal with said frame of data coupled to said generator and said comparator means;

a second converting means for converting the output of said combining means to the time domain and for providing a control frame of information, coupled to said combining means; and

randomization means coupled to said second converting means for randomizing said control frame such that said control frame may be repeatedly used as said control signal for said vibration control signal.

3,848,116

DATA PROCESSING SYSTEM HAVING TRIPLEXED SYSTEM UNITS

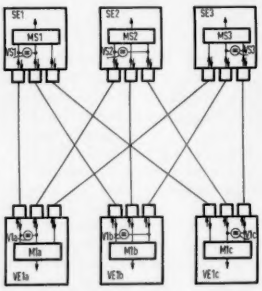
Hans-Ulrich Moder, and Gunter Grossman, both of Munchen, Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed Jan. 5, 1973, Ser. No. 321,271

Claims priority, application Germany, Jan. 18, 1972, 2202231

Int. Cl. G06f *11/08*

U.S. Cl. 235—153 AE **3 Claims**



1. Circuit for detecting malfunctioning system units of a data processing system, said system units being processing units and storage means, said system units being interconnected to provide redundancy in case of malfunction, the arrangement comprising:

standard data connection means through which each said processing unit is connected to each said storage means, the number of standard data connection means on one said system unit corresponding to the number of others of said system units to which said one system unit is connected,

comparator means connected after each said standard data connection for incoming data traffic, each said comparator being connected to two standard connection units of a said standard data connection, and

majority logic circuit means connected after each said standard data connection means in each said system unit, each said majority logic circuit being connected to all of the standard connection units in a system unit,

whereby each said comparator evaluates data received at two standard connections of a said standard data connection means and each said majority logic circuit evaluates data received at all of the standard connection units of a said standard connection means.

3,848,117

ELECTRONIC ANALOG OPERATIONAL CIRCUIT

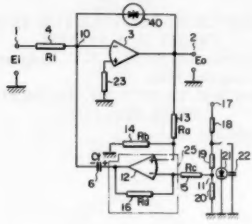
Tadayoshi Saito, Hitachi; Kiyoshi Miura, Ibaraki-ken, and Yoshiyuki Nakano, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 6, 1973, Ser. No. 348,501

Claims priority, application Japan, Apr. 7, 1972, 47-25615; Dec. 13, 1972, 47-124379

Int. Cl. G06g 7/18

U.S. Cl. 235—193 26 Claims



1. An electronic analog operational circuit comprising an input circuit for receiving a signal voltage, a first operational amplifier having a substantially infinite gain to which a signal voltage is supplied through the input circuit, means for summing the output voltage of the first operational amplifier and the output voltage of a bias means, and a feedback circuit having at least a polarized capacitor for feeding the output voltage of the summing means back to the input terminal of the first operational amplifier, in which the bias means includes means for generating a predetermined voltage such that the polarity of the voltage applied across the polarized capacitor is in accordance with that of the capacitor over the entire range of the output of the first operational amplifier.

3,848,118

JET PRINTER, PARTICULARLY FOR AN INK EJECTION PRINTING MECHANISM

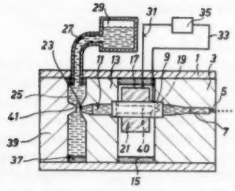
Eilt-Heyo Rittberg, Wilhelmshaven, Germany, assignor to Olympia Werke AG, Wilhelmshaven, Germany

Filed Mar. 5, 1973, Ser. No. 338,683

Claims priority, application Germany, Mar. 4, 1972, 2210512

Int. Cl. B05b 1/08

U.S. Cl. 239—101 12 Claims



1. In a jet printer including a compression chamber having one end, arranged to face the surface to be printed, provided with a discharge nozzle and its other end provided with an inlet for the printing liquid coming from a reservoir, and an exciter system arranged to vary the volume of the chamber in brief pressure surges, the improvement comprising a fluidic component constituted by a nozzle and an associated impact plate disposed at the printing liquid inlet to said chamber and constituting a non-reciprocal flow element presenting a resistance to flow of liquid which has a higher value for flow in the direction from said chamber toward the reservoir than in the opposite direction.

3,848,119

LIGHTING PROJECTOR

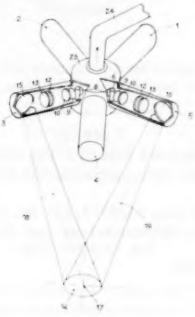
Andre Masson, Saint Heand(Loire), and Jack Joubert, Montluel(Ain), both of France, assignors to Establissements Pierre Angenieux, Paris, France

Filed July 16, 1973, Ser. No. 379,577

Claims priority, application France, July 27, 1972, 72.65808

Int. Cl. A61b 1/06

U.S. Cl. 240—1.4 5 Claims



1. A lighting projector, particularly for operating room use, comprising a star-shaped arrangement including a plurality of basic elements, disposed circumferentially at intervals from a common center, said basic elements each comprising a light source for producing a light beam, a frosted zone in close proximity to said light source and illuminated by said light source, a wide-apertured optical condensing system in the path of said light beam for concentrating said beam onto an intense beam of relatively narrow cross-section, and a concave mirror located opposite said condensing system and reflecting at least a portion of said light beam, and a reflecting mirror and an optical element in the path of said intense beam and forming the image of said frosted zone on a plane field of illumination.

3,848,120

LIGHT BULB AND REFLECTOR ASSEMBLY

Kenneth Roy Wolfe; Frank Woodward, and Arthur Samuel Vause, all of London, England, assignors to Thorn Electrical Industries Limited, London, England

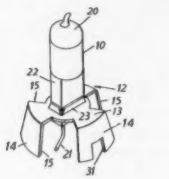
Filed Oct. 18, 1973, Ser. No. 407,558

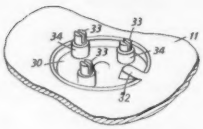
Int. Cl. F21m 3/02

U.S. Cl. 240—41 BM 7 Claims

1. In a lighting unit having a reflector and a light bulb supported in spaced relation to the reflecting surface of the reflector, said light bulb having a press seal at one end thereof, the improvement comprising a support member having a web portion, said press seal extending through and being held by said web portion and said web portion extending outwardly from the press seal, and a flange portion extending from the

periphery of the web portion towards the reflector, and a depression in the reflecting surface of the reflector, said flange





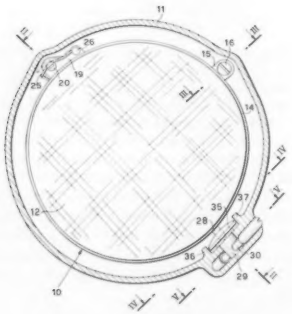
portion of the support member mating with the depression to locate the bulb in the said spaced relation.

3,848,121

HEADLAMP FOR MOTOR VEHICLES

Ivo Colucci, Milan, Italy, assignor to Alfa Romeo S.p.A., Milan, Italy

Filed June 14, 1973, Ser. No. 370,057
Claims priority, application Italy, June 22, 1972, 24046/72
Int. Cl. F21v *7/00*
U.S. Cl. 240—41.6 **8 Claims**



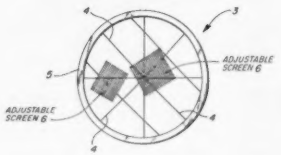
1. Apparatus for supporting a headlamp in a seating of a motor vehicle to enable manual adjustment of the position of the headlamp, said apparatus comprising three support means connecting the headlamp to the seating, said three support means being positioned at the apices of a triangle which lies in a plane substantially perpendicular to the light beam from the headlamp, a first and second of said support means being on one side of said triangle which is substantially horizontal, the first and third of said support means being on a second side of said triangle which is substantially vertical, said first support means comprising a mounting member securing the headlamp to the seating such that the headlamp is pivotable thereat, said second mounting means comprising an aiming screw adjustably connecting the headlamp to the seating to pivotably displace the headlamp about said vertical side of said triangle, said third mounting means comprising a threaded member engaging said headlamp and displaceable in opposite directions to rotate the headlamp about said horizontal side of said triangle, actuator means threadably engaging said threaded member to move the same in either of said opposite directions by turning said actuator means, and means supporting said actuator means for displacement between first and second positions to carry said threaded member therewith and produce rotation of the headlamp about said horizontal side of the triangle, said first and second positions corresponding to two respective predetermined load conditions of the motor vehicle.

3,848,122

ADJUSTABLE LIGHT DIFFUSER FOR AN OPTICAL PROJECTION SYSTEM

Walter A. Hutchison, III, Webster, N.Y., assignor to Itek Corporation, Lexington, Mass.

Filed Sept. 13, 1973, Ser. No. 396,917
Int. Cl. F21v *11/14*
U.S. Cl. 240—46.51 **12 Claims**



1. An adjustable light diffuser comprising:
a. a support frame;
b. at least two thin elongated screen support members suspended from said support frame; and
c. at least one adjustable screen, having orifices formed therein, for attenuating light from a source positioned on one side of said light diffuser, said screen being mounted upon said elongated support members by having said elongated support members pass through said orifices so that said screen may be readily moved about said elongated screen support members.

3,848,123

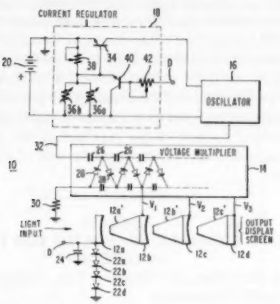
AUTOMATIC BRIGHTNESS CONTROL FOR IMAGE INTENSIFIER TUBE

William Andrew Parker, Lancaster, and Robert A. Kryder, Strasburg, both of Pa., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 346,673, March 30, 1973, abandoned. This application Nov. 26, 1973, Ser. No. 418,920
Int. Cl. H01j *31/50, 39/12*
U.S. Cl. 250—213 VT **14 Claims**

1. In an image brightness control system for an image intensifier tube of the type comprising: an image intensifier tube having a photocathode input electrode emitting electrons in response to the intensity of light applied thereto and a phosphor display screen output electrode providing an image display in accordance with said electrons impinging thereon; a voltage multiplier applying a direct voltage between said input and output electrodes for accelerating said electrons and directing said accelerated electrons to said display screen for increasing the brightness of said image; an oscillator circuit applying an alternating voltage to said voltage multiplier, a direct current source; and current-limiting means coupled between said direct current source and said oscillator to limit the direct current supplied to said oscillator from said direct current source to a predetermined current level for limiting the brightness of said image displayed on said screen; the improvement therewith comprising:

a nonlinear current sensing means coupled between said photocathode input electrode and said direct current source for developing a signal voltage which is substantially proportional to logarithmic changes of photocurrent in said image intensifier tube; and



means coupling said current-limiting means to said current sensing means and responsive to said signal voltage for controlling said current-limiting means to provide a substantially constant current source to said oscillator at input light intensity levels below a predetermined level, and to provide current varying in accordance with the current demand of said image intensifier tube at input light intensity levels exceeding said predetermined level.

3,848,124

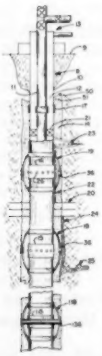
METHOD AND APPARATUS FOR DETERMINING COMMUNICATION OF A PERFORATED ZONE WITH A SECOND ZONE

Roy R. Vann, P.O. Box 38, Artisia, N. Mex. 88210

Continuation-in-part of Ser. No. 109,381, Jan. 25, 1971, Pat. No. 3,710,114. This application Dec. 15, 1972, Ser. No. 315,605The portion of the term of this patent subsequent to Jan. 9, 1990, has been disclaimed.

Int. Cl. G01v *5/00*

U.S. Cl. 250—260 **18 Claims**



1. In a borehole having a casing cemented therein with the cement filling the annulus between the casing and the borehole wall, wherein the casing and cement have been perforated adjacent a potential production zone; the method of locating the presence of passageways formed externally of the casing and longitudinally of the borehole comprising the steps of:

1. placing a first isotope uphole and a second isotope downhole of the perforations, said isotopes having a known half-life, said isotopes being placed at the interface formed between the cement and the casing wall;
2. analyzing the borehole near the perforated zone to determine the translocation of either of the isotopes to thereby determine the length and direction of any passageway which may be found, and to determine the location of the passageway with respect to the perforated zone.

3,848,125

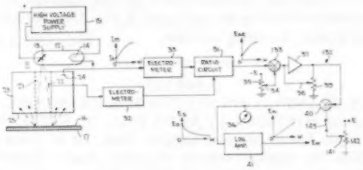
COATING THICKNESS GAUGE

Orval L. Utt, and Howard J. Evans, both of Columbus, Ohio, assignors to Industrial Nucleonics Corporation, Columbus, Ohio

Filed Sept. 20, 1971, Ser. No. 181,836

Int. Cl. G01n *23/22*

U.S. Cl. 250—272 **17 Claims**



1. Apparatus for measuring the thickness of a metal coating on a metal substrate comprising a source of radiation irradiating the coating and substrate, said source of radiation causing the coating and substrate to fluoresce and emit energy at different energy levels, a detector responsive to the energy from the coating and substrate for deriving an output signal having a first finite, nonzero value for a coating thickness of zero and varying as a substantially increasing exponential function to a second value for a predetermined coating thickness, said output signal decreasing in value for coating thicknesses greater than the predetermined thickness, means responsive to the output signal for converting the output signal into substantially an exponentially decreasing indication in a range from zero to the predetermined thickness, said converting means including: means offsetting the output signal by an amount so that the indication has a first fixed value for a finite coating thickness within the range, and means for multiplying the output signal to control the slope magnitude of the exponential indication so that the output indication has a second fixed value for a zero thickness coating layer.

3,848,126

RECORDING OF KOSSEL LINES

Norman Swindells, Wallasey, and Michael Bevis, Wirral, both of England, assignors to National Research Development Corporation, London, England

Filed June 20, 1973, Ser. No. 371,724

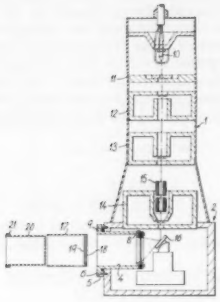
Claims priority, application Great Britain, July 7, 1972, 31961/72

Int. Cl. H01j *37/26*

U.S. Cl. 250—272 **5 Claims**

1. Apparatus for recording Kossel lines produced by irradiating a crystalline specimen with a beam of fundamental particles comprising mounting means for mounting the specimen in the path of the beam of fundamental particles so as to generate divergent X-rays from a point source within the

specimen which fulfill the Bragg laws, a planar recording medium, means for mounting said planar recording medium



parallel to the beam of fundamental particles and spaced from the specimen whereby the divergent X-rays form Kossel lines on said planar recording medium.

3,848,127

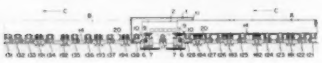
X-RAY EXAMINATION SYSTEM FOR EXAMINING THE WELDED PORTIONS AT BOTH ENDS OF STEEL PIPES

Seiji Fujii; Kunio Matsui; Shigeru Sato, all of Fukuyama; Keijiro Ito, Osaka; Takashi Koizumi; Shozo Tsuboyama, both of Kyoto, and Hiroyuki Watanabe, Otsu, all of Japan, assignors to Nippon Kokan Kabushiki Kaisha, Tokyo; Shimadzu Seisakusko Ltd., Kyoto-shi and Shimadzu Metal Industries Ltd., Otsu-shi, all of, Japan

Filed Sept. 25, 1973, Ser. No. 400,549

Int. Cl. G01n *23/00*

U.S. Cl. 250—321 **4 Claims**



1. An X-ray examination system for examining the welded portions at both ends of steel pipes by X-ray penetration and photographing which comprises an examination chamber provided with two X-ray penetration devices; a first roller conveyor line formed of a plurality of roller stands capable of jointly feeding a steel pipe being examined to the examination chamber and disposed on one side of the examination chamber; a first turning roller assembly comprising a plurality of turning roller stands provided at a suitable point between the respective roller stands of the first roller conveyor line in alignment with said roller stands so as to rotate a steel pipe in the circumferential direction; a first automatic welded seam detector for detecting the welded portion of the forward end of a steel pipe while being rotated by the first turning roller assembly and stopping the rotating steel pipe at a prescribed peripheral angle; a second roller conveyor line formed of a plurality of roller stands aligned with those of the first roller conveyor line, and disposed on the opposite side of the examination chamber so as to send further a steel pipe having the welded portion at its forward end already examined in the direction in which the steel pipe leaves the examination chamber; a second turning roller assembly comprising a plurality of turning roller stands each located at a suitable point between the respective roller stands of the second roller conveyor line in alignment with said roller stands so as to rotate a preceding steel pipe now brought to the opposite side of the examination chamber in the circumferential direction; a second automatic welded seam detector for detecting the welded portion of the rear end of the preceding steel pipe placed on said opposite side while the steel pipe is rotated by the second turning roller assembly so as to bring the rotating steel pipe to rest at a prescribed peripheral angle; and a control chamber annexed to the examination chamber for remote control so as to operate the first and second roller conveyor lines, attach one of the X-ray penetration devices of the examination chamber to the welded portion of the forward end of a succeeding steel pipe brought to the examination chamber by traveling on the first roller conveyor line and fit the order X-ray penetration device to the welded portion of the rear end of the preceding steel pipe already brought to the opposite side of the examination chamber.

3,848,128

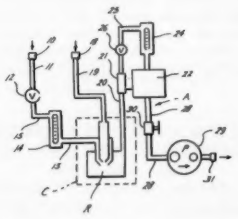
CONTROL CHAMBER APPARATUS FOR POLLUTANT DETECTORS

Robert D. McMillan, Jr., Houston, Tex., assignor to McMillan Electronics Corporation

Filed June 30, 1972, Ser. No. 268,136

Int. Cl. G01t *1/20*

U.S. Cl. 250—336 **10 Claims**



1. A control chamber apparatus for a pollutant detector for chemiluminescent detection of pollutants by reacting a reagent with a sample to determine the amount of pollutant therein, comprising:

a. reaction chamber means for receiving the reagent and the sample;

b. photometric circuit means for measuring the reaction between the reagent and the sample in said reaction chamber means;

c. canister means for housing both said reaction chamber means and said photometric means therein; and

d. control means for regulating temperature in said canister means to thereby regulate the temperature of said reaction chamber means and photometric circuit means wherein detection conditions are stabilized for accurate determination of the amount of pollutant.

3,848,129

SPECTRAL DISCRIMINATING RADIATION DETECTION APPARATUS

Burton D. Figler, Winthrop, and Theodore J. Nussdorfer, Lexington, both of Mass., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 24, 1973, Ser. No. 392,164

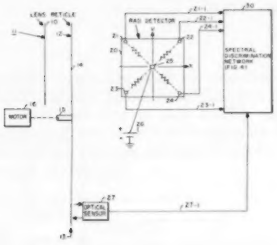
Int. Cl. G01t *1/16*

U.S. Cl. 250—339 **6 Claims**

1. Radiation detection apparatus for discriminating between radiations which have different spectral distributions; said apparatus comprising:

an optical device for collecting incident radiations and focusing same;

a filter for filtering the collected and focused radiations;
a detector element for converting the filtered radiations into an electrical signal;
said filter including
a. a revolving reticle for spatially filtering the collected radiations;
b. first and second bandpass spectral filters which pass radiations of long and relatively short wavelength, respectively, said spectral filters being so arranged on said reticle and said detector element being so located that the detector element receives filtered radiation from the first and second filters during first and second portions, respectively, of a reticle revolution;



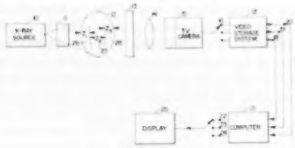
means for producing first and second sampling signals during said first and second reticle revolution portions, respectively;
means responsive to the first and second sampling signals to convert said electrical signal produced by the detector element into first and second sequences of signal samples indicative of long and short wavelength filtered radiation, respectively;
means for comparing the first and second sequences of signal samples with one another to produce a comparison signal; and
means for producing a target signal when the amplitude of said comparison signal at least equals a predetermined value.

3,848,130

SELECTIVE MATERIAL X-RAY IMAGING SYSTEM

Albert Macovski, 4100 Mackay Dr., Palo Alto, Calif. 94306

Filed June 25, 1973, Ser. No. 373,465
Int. Cl. G01t 1/20
U.S. Cl. 250—369 **15 Claims**



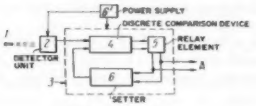
1. Apparatus for providing a plurality of processed x-ray images represening specific materials in an object comprising:
a plurality of sources each having a different x-ray energy spectrum;
means for recording a plurality of images each representing the different x-ray energy spectrum transmitted through the object with the number of recorded images being at least as great as the number of processed images;
means for scanning each of the plurality of recorded images to generate a plurality of scanned signals;
a computer for processing the plurality of scanned signals to generate the plurality of processed signals represent specific materials in the object; and
mean for displaying the processed signals whereby processed x-ray images are formed representing specific materials in the object.

3,848,131

RADIOACTIVE RADIATION DETECTION SYSTEM

Vladimir Nikolaevich Pozdnikov, ulitsa Kveles, 15, korpus 1, kv. 46; Oleg Leonidovich Sazonov, ulitsa Moskovskaya, 285, korpus 5, kv. 79; Iegoshua Mikhailovich Taxar, ulitsa Moskovskaya, 254, korpus 6, kv. 4; Edgar Rikhardovich Tesnavs, ulitsa Moskovskaya, 285, korpus 5, kv. 82; Vladimir Alexandrovich Yanushkovsky, ulitsa Vilisa, Latsisa, 2a, kv. 46; Alexandr Pavlovich Gavrilov, ulitsa Gospitalnaya, 29, kv. 5; Valentin Petrovich Korkonosov, prospekt Komarova, 23, kv. 72; Alexei Vasilievich Peresypkin, ulitsa Grivas, 11, korpus 32, kv. 14, all of Riga, and Eduard Parfentievich Shapovalov, stantsiya Priedaine, prospekt Lielais, 8, kv. 4, Jurmala, all of U.S.S.R.

Filed Aug. 16, 1972, Ser. No. 281,009
Int. Cl. G01t 1/16
U.S. Cl. 250—388 **9 Claims**



1. A radioactive radiation detection device comprising: a detector unit registering ionizing radiation and converting said ionizing radiation into electric pulses; an electronic relay unit coupled electrically to said detector unit; a discrete comparision device in said electronic-relay unit and having two outputs and two inputs a first one of which is connected to said detector unit producing a statistical series of pulses; a relay element having two inputs and two outputs serving as the output of said device, the inputs of said relay element being connected to the outputs of said discrete comparison device; a setter of threshold frequencies of a regular series of electric pulses in said electronic unit and having two inputs and one output, said setter having two frequency thresholds, said threshold frequency setter having two inputs connected to said two outputs of said relay element and having its output connected to the second input of said discrete comparison device whereby said device acquires a first or second state depending on the ratio between the frequencies of the statistical and regular series of said pulses.

3,848,132

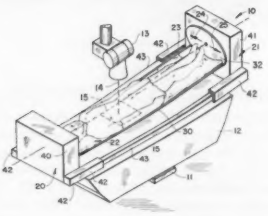
PATIENT ROTATOR AND METHOD OF CONDUCTING X-RAY STUDIES

Anthony J. Foderaro, Cuyahoga, Ohio, assignor to Picker Corporation, Cleveland, Ohio

Filed Dec. 20, 1972, Ser. No. 316,812
Int. Cl. G03b 41/16
U.S. Cl. 250—439 **25 Claims**

1. A patient rotator for rotating a patient while maintaining a center of interest within the patient along an examination axis as the patient is rotated, comprising:
a. a supporting structure;
b. a patient support adapted to receive and support a patient;

c. mounting means mounting said support on said structure such that said support is rotatable about a longitudinal axis of rotation while said axis of rotation is shiftable laterally of the examination axis; and



d. control means coupled to said mounting means for laterally shifting said axis of rotation relative to said examination axis during rotation of said support as is required to maintain a preselected center of interest within the patient in alignment with the examination axis.

3,848,133

ROLL FILM RADIOGRAPHIC CASSETTE

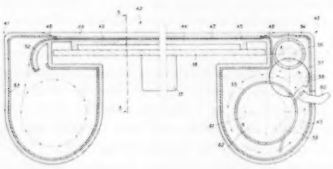
Marie Jean Blanc, Rueil, France, and Emile Frans Stievenart, Hoboken, Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 138,997, April 30, 1971, abandoned. This application Feb. 12, 1973, Ser. No. 331,373

Claims priority, application Great Britain, Apr. 1, 1970, 21146/70

Int. Cl. G03b *17/26*

U.S. Cl. 250—469 **5 Claims**



1. A radiographic film cassette for use in mastography by means of penetrating radiation comprising a first housing formed of radiation opaque material for holding a supply roll of radiographic film, a second housing formed of radiation opaque material for holding a roll of exposed film, a take-up roller rotatably mounted in said second housing for winding said roll of exposed film thereon, each such housing having an opening slit therein for the passage of the film, an interconnecting throat-like rigid frame of radiation opaque material extending between said housing and including two closely spaced side walls defining a narrow generally rectilinear film passageway communicating at its opposite ends with said housing openings, said throat-like frame having an opening in one side wall between said housings to define an exposure frame for a section of the film in said passageway and carrying on the other side wall facing said opening in intensifying screen at least the size of and aligned with said opening, a thin radiation permeable, actinic light impermeable film of generally stretchable material covering said opening, and adapted to yield under pressure to press the film against the screen, manually operable rotating means accessible exteriorly of said second housing for rotating said take-up roller to advance film from said supply roll through the passageway in said throat-like frame, and exteriorly releasable stop means effective to halt film movement after a predetermined distance including a friction roller within said second housing in frictional engagement with said film.

3,848,134

FILM DISPLACEMENT DEVICE FOR X-RAY APPARATUS

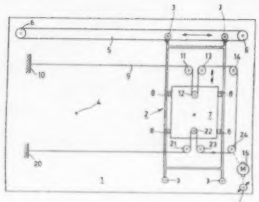
Kurt Gieschen, and Walter Schmidemann, both of Hamburg, Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed May 25, 1973, Ser. No. 363,838

Claims priority, application Germany, May 31, 1972, 2226473

Int. Cl. G01n *21/34*

U.S. Cl. 250—471 **7 Claims**



1. In an X-ray apparatus including a base and a carriage for carrying a film, the improvement in combination therewith of means for displacing said carriage comprising a frame which is linearly displaceable on said base in a first direction, said carriage being carried by said frame and being displaceable linearly on said frame in a second direction normal to said first direction, first drive means for moving said carriage in said second direction comprising a system of pulleys and a cord of fixed length extending about said pulleys with ends of the cord fixedly secured on said base at first and second fixed points, said pulleys including a stationary pulley means fixed on said base, first and second carriage pulleys on said carriage, and first and second pairs of frame pulleys on said frame, one pair generally adjacent each of said carriage pulleys, said cord formed as a principal loop extending from said first fixed point to said stationary pulley means and back to said second fixed point, said cord further formed into two secondary loops, each situated along the principal loop intermediate one end of the cord and said stationary pulley means, wherein said cord from said first fixed point extends to one of the pulleys of said first pair of frame pulleys, then to the first carriage pulley, then to the other of said first pair of frame pulleys, then to said stationary pulley means, then to one of the pulleys of said second pair of frame pulleys, then to the second carriage pulley, to the remaining frame pulley, and then to the second fixed point, said drive means further comprising motor means for displacing a portion of said cord extending between said two carriage pulleys for moving the carriage in said second direction.

3,848,135

RADIATION SOURCE HOLDER

Thomas E. Reim, Willowick; Jerry J. Pollack, Brookpark, and Robert A. Kemmerling, Cleveland, all of Ohio, assignors to Republic Steel Corporation, Cleveland, Ohio

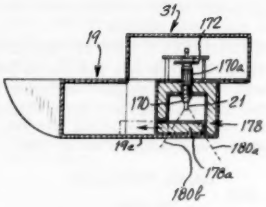
Division of Ser. No. 720,057, April 10, 1968, abandoned. This application Oct. 29, 1970, Ser. No. 85,247

Int. Cl. G21h *5/00*

U.S. Cl. 250—496 **1 Claim**

1. A plow for holding a source of radiation for acting upon a granular material, comprising a flat-bottomed housing for

containing the source of radiation, said housing having a forwardly directed wedge-shaped and flat-bottomed front portion toward which the material is directed in a stream of material for dividing the material so that it passes on both sides of and underneath the housing, said wedge-shaped portion being forwardly terminated in a prow extending forwardly toward the material applied to the plow, said prow comprising a vertically disposed plate curved on a leading edge thereof from the upper part of its forward end down to the lower part of its rearward end to permit the material to pass by both sides of and underneath the housing.

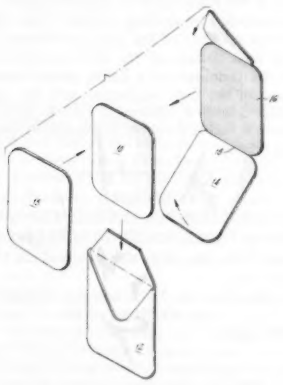


3,848,136

APPLICATION OF DIMENSION INDICIA TO X-RAY EXPOSURE

Leslie W. Seldin, 40 E. 66th St., New York, N.Y. 10021

Filed Apr. 20, 1973, Ser. No. 353,204
Int. Cl. G03b *41/16*
U.S. Cl. 250—476 18 Claims



1. An X-ray film package for applying dimension indicia on the developed X-ray film, comprising:

a sealable, light excluding, thin envelope, having a pocket defined therein and having a first surface;

an X-ray film having a first surface which is to be exposed to X-radiation; said film being positioned in said envelope pocket and said film first surface facing said first surface of said envelope; said envelope first surface being comprised of X-radiation transparent material;

X-radiation opaque material arranged to define dimension indicia and supported in position near said film first surface and on the side of said first film surface that faces toward an X-ray source;

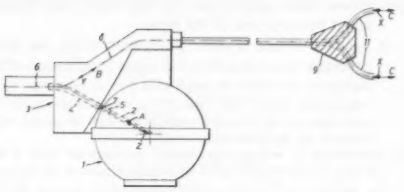
whereby exposure of said X-ray film package to X-radiation impinged upon said envelope first surface produces a photographic image of the dimension indicia on said film first surface.

3,848,137

HANDLING OF RADIO-ACTIVE SOURCES

Jack Ellis, London, England, assignor to Sidney Geoffrey Young, London, England

Filed Apr. 9, 1973, Ser. No. 348,896
Int. Cl. G21f *5/00*
U.S. Cl. 250—497 7 Claims



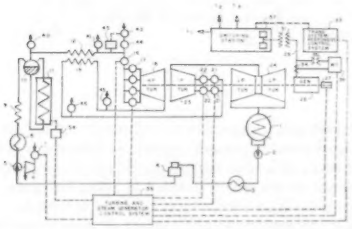
1. A method of handling an isotope capsule carried at the end of a radio-active source holder, comprising retracting the source holder from one position into a curved passage of a guide member through an inlet at one end of the passage, turning the guide member through an angle of less than 360° about the central axis of the other end of the passage, and then ejecting the source holder through the inlet into a different position.

3,848,138

METHOD OF EFFECTING FAST TURBINE VALVING FOR IMPROVEMENT OF POWER SYSTEM STABILITY

Robert H. Park, Brewster, Mass., assignor to Fast Load Control Inc., Brewster, Mass.

Continuation-in-part of Ser. No. 244,594, April 12, 1972. This application Aug. 15, 1973, Ser. No. 388,619
Int. Cl. F01k *13/02*
U.S. Cl. 290—40 16 Claims



1. In a steam-electric installation which incorporates a reheater, power operated relief valves located ahead of the high pressure turbine, which are so controlled as to open and discharge steam to atmosphere when pressure ahead of the valve or valves exceeds a preset value that is less than that at which the turbine's high pressure safety valves are set to open, and to reclose when pressure falls below a preset value which exceeds normal operating pressure ahead of the turbine, which installation is part of a power system which includes a plurality of prime mover driven generators, which generators are interconnected by a plurality of transmission circuits, the method of employing fast turbine valving as a way to avoid development of system instability as a consequence of stability endangering events of a type adapted to cause the generator of the said installation to experience a sudden at least momentary reduction of load, which comprises the steps of,

1. providing within the turbine and steam generator control system, for response to a fast valving initiation signal

input by bringing into effect preprogrammed jointly effected processes of,

a. intercept valve closure effected fast enough to have a favorable effect on generator rotor first swing stability, and control valve repositioning plus intercept valve reopening so effected as to cause turbine driving power subsequent to generator rotor first forward swing to hold below a preset value that is less than the driving power that applied prior to the event that brought about development of the signal,

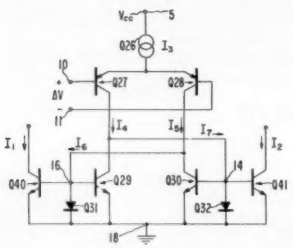
b. runback of rate of steam production within the steam generator to a value that will cause termination of the discharge of steam through said power operated relief valves that will at first take place, with provision so that said runback is effected rapidly enough to avoid overheating of the reheater,

2. providing in a preprogrammed manner so that a fast valving signal is generated and transmitted as an input to the turbine and steam generator control system on the occurrence of certain types of events that endanger preservation of system stability.

3,848,139
HIGH-GAIN COMPARATOR CIRCUIT

James G. Holt, Jr., Mountain View, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Sept. 14, 1973, Ser. No. 397,494
Int. Cl. H03k *5/20*
U.S. Cl. 307—235 R **7 Claims**



1. A high-gain comparator circuit producing first and second bilevel output signals in response to differences in magnitude of first and second input signals, said circuit comprising:

a. a current source means coupled to a first reference potential for producing a substantially constant current I_3;

b. first and second switching means coupled to said source means for passing variable currents I_4 and I_5, respectively, wherein $I_3 = I_4 + I_5$, each of said first and second switching means possessing an output terminal, and each possessing a control input terminal for receiving a respective one of said first and second input signals;

c. third and fourth switching means having input terminals coupled to the output terminals of said first and second switching means for receiving said currents I_4 and I_5, respectively, each of said third and fourth switching means possessing an output terminal coupled to a second reference potential and each possessing a control input terminal cross-coupled to the output terminals of said second and first switching means, respectively;

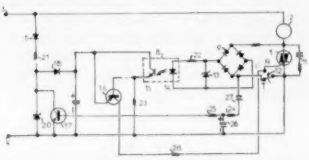
d. first means coupled between the control input terminal of said third switching means and said second reference potential for developing said first bilevel output signal in response to said current I_5, wherein said first bilevel output signal controls shunting of said current I_4 through said third switching means to said second reference potential; and

e. second means coupled between the control input terminal of said fourth switching means and said second reference potential for developing said second bilevel output signal in response to said current I_4, wherein said second bilevel output signal controls shunting of said current I_5 through said fourth switching means to said second reference potential.

3,848,140
CONTROL CIRCUIT FOR THYRISTORS

Georges Roger Guermeur, Belfort, and Daniel Seigneur, Bethoncourt, both of France, assignors to Societe Industrielle Honeywell Bull (Societe anonyme), Paris, France

Filed Dec. 26, 1972, Ser. No. 317,895
Claims priority, application France, Dec. 28, 1971, 71.47027
Int. Cl. H03k *17/00*
U.S. Cl. 307—252 **12 Claims**

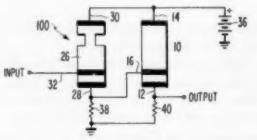


1. Control circuit for the trigger of a thyristor or triac by detection of the zero passage through zero of the voltage applied to its terminals, characterized in that a rectifier circuit is linked to the terminals of the thyristor and is connected to a photoelectric-emission diode of a photocoupler which controls a first transistor by sending a signal to the trigger of the thyristor at the moment of the passage through zero of the voltage, the feed voltage of the aforementioned transistor being from the terminals of a Zener diode whose anode is linked to one of the feed conductors and the cathode of a second conductor over a resistor and a diode, a second transistor whose base is tied to the rectifier being mounted in parallel on the Zener diode.

3,848,141
SEMICONDUCTOR DELAY LINES USING THREE TERMINAL TRANSFERRED ELECTRON DEVICES

Fred Sterzer, Princeton, N.J., assignor to RCA Corporation, New York, N.Y.

Filed Mar. 26, 1973, Ser. No. 344,862
Int. Cl. H03k *17/26*
U.S. Cl. 307—293 **15 Claims**

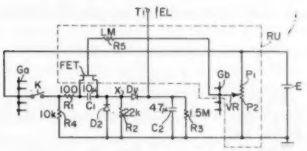


1. A semiconductor delay line comprising:

a. a first transferred electron device having input, output and third terminals, said device generating an output signal in response to a predetermined D.C. bias voltage coupled to said first device third terminal and an input signal having a predetermined waveform coupled to said first device input terminal, said first device output signal having a nonuniform current characteristic;

b. an active element having input and output terminals;
c. means for biasing said transferred electron device at a voltage above its domain sustaining voltage and below its threshold voltage;
d. means for biasing said active element below its triggering threshold; and
e. means for coupling said first device output signal from said first device output terminal to said input terminal of said active element whereby said active element will be triggered by said transferred electron device into generating an active element output electrical signal having said input signal waveform following a delay determined by said nonuniform current characteristic of said transferred electron device output signal, said biasing means for said transferred electron device and said threshold level of said active element.

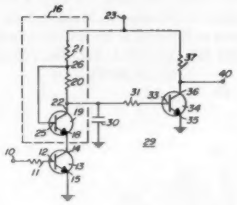
3,848,142
ENVELOPE SIGNAL FORMING CIRCUIT
Takeshi Adachi, Hamamatsu, Japan, assignor to Nippon Gakki Seizo Kabushiki Kaisha, Hamamatsu-shi, Shizuoka-ken, Japan
Filed Mar. 20, 1973, Ser. No. 343,048
Claims priority, application Japan, Mar. 22, 1972, 47-28721; Mar. 22, 1972, 47-28722
Int. Cl. H03k *17/28*
U.S. Cl. 307—294 **1 Claim**



1. In an improved envelope signal forming circuit having a first charge-discharge capacitor, a diode, a second charge-discharge capacitor connected through said diode to said first charge-discharge capacitor, a first charge resistor connected in parallel to a series circuit consisting of said diode and said second charge-discharge capacitor, and a second discharge resistor connected in parallel to said second charge-discharge capacitor for producing as an envelope signal the voltage of said second charge-discharge capacitor, the improvement which comprises:
a field-effect transistor to control the envelope signal having a decaying waveform, said field-effect transistor having its drain and source electrodes directly connected across said first charge-discharge capacitor; and
a control voltage setting device comprising a variable resistor and a power source connected in parallel thereto, the wiper arm of said variable resistor being connected to the gate electrode of said field-effect transistor, the resistence of said field-effect transistor being controlled by the voltage set by said variable resistor to control the envelope signal.

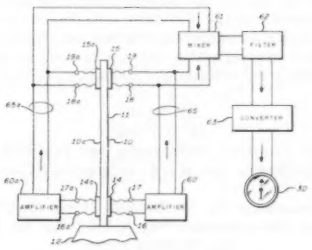
3,848,143
SELF-COMPENSATED AMPLIFIER CIRCUIT
Raymond J. Millington, and John R. Rexek, both of Coral Springs, Fla., assignors to Motorola, Inc., Franklin Park, Ill.
Continuation of Ser. No. 198,594, Nov. 15, 1971, abandoned. This application Mar. 12, 1973, Ser. No. 340,851
Int. Cl. H03k *1/14*
U.S. Cl. 307—297 **9 Claims**

1. A semiconductor amplifier operable over the voltage range of a one cell battery and having a DC output voltage which varies inversely with the voltage applied by the one cell battery, said amplifier including in combination, a first transistor having base, emitter and collector electrodes, means coupling said emitter electrode to a reference potential, first resistance means having a first terminal coupled to said collector electrode and a second terminal, second resistance means having a first terminal coupled to said first resistance means second terminal and forming a first junction thereat, and a second terminal adapted to be coupled to the one cell battery,



means coupling said base electrode to said first junction for providing a bias voltage at said base electrode substantially the same as the voltage at said first junction, and for maintaining a constant voltage at said first junction over the voltage range of the one cell battery, output circuit means coupled to said collector electrode, said collector electrode developing said output voltage thereat, said output voltage being less than the bias voltage at said base electrode and varying inversely with the voltage of the one cell battery.

3,848,144
ACOUSTIC DELAY SURFACE WAVE MOTION TRANSDUCER SYSTEMS
Lloyd R. Schissler, Jamaica Plain, Mass., assignor to Sperry Rand Corporation, New York, N.Y.
Filed Apr. 11, 1973, Ser. No. 350,274
Int. Cl. H01v *7/00*
U.S. Cl. 310—8.1 **15 Claims**



1. Transducer means comprising:
flexure means having first and second opposed flexible surface layer means for separately propagating respective acoustic waves along first and second respective predetermined paths therein,
first and second exciter means for exciting and propagating said respective first and second acoustic waves along said respective predetermined paths,
first and second receiver means along said respective predetermined paths for receiving and converting said acoustic waves into electric signals,
first and second respective feed back means for coupling said first receiver means to one of said first exciter means

and for coupling said second receiver means to second exciter means for forming respective first and second self-resonant closed loop circuit means oscillating at different respective first and second odd multiples of a predetermined frequency, and

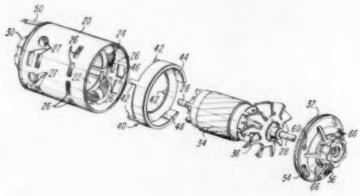
signal processor means jointly responsive to said first and second closed loop circuit means for deriving a measure of the flexure of said flexure means.

3,848,145

ELECTRIC MOTOR VENTILATION

Robert W. Goebel, and George R. Marous, both of Springfield, Ohio, assignors to Robbins & Myers, Inc., Springfield, Ohio

Filed Jan. 22, 1973, Ser. No. 325,229
Int. Cl. H02k *9/06*
U.S. Cl. 310—60 **4 Claims**



1. In an electric motor adapted for use within the cabinet of a business machine and including a shell supporting a stator, a rotor extending through said stator and including a rotor shaft, a set of end bells mounted on the end portions of said shell and confining bearings for rotatably supporting said shaft, an air exhaust opening within one end portion of said shell, and a centrifugal fan mounted on said rotor shaft within said one end portion of said shell between said stator and one of said end bells, the improvement comprising an annular radial baffle wall positioned within said shell between said stator and said fan and defining a first air inlet on one axial end of said fan, a substantially cylindrical shroud extending around said fan and having a peripheral opening aligned with said air exhaust opening within said shell, said cylindrical shroud and said radial baffle wall being integral and forming a unit within said shell, said one end bell defining another air inlet opening on the opposite axial end of said fan, and said one end bell also defining an air exhaust opening disposed radially outwardly of said air inlet opening within said one end bell to effect improved cooling and ventilating of said motor and said cabinet.

3,848,146

AC MOTOR

John Allen Tourtellot, Indianapolis, and Frederick Roland Stave, Oaklandon, both of Ind., assignors to RCA Corporation, New York, N.Y.

Continuation of Ser. No. 240,037, March 31, 1972, abandoned. This application Aug. 6, 1973, Ser. No. 385,667
Int. Cl. H02k *19/14*
U.S. Cl. 310—163 **3 Claims**

1. A synchronous motor comprising:

a stator having a pair of poles;

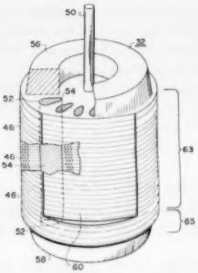
means for producing a rotating single phase magnetic field between said poles;

a rotor rotatably mounted on an axis between said poles, said rotor including a plurality of washer-like members each having a plurality of annularly disposed openings;

said plurality of washer-like members disposed with corresponding openings in registration;

a squirrel-cage assembly including end members and portions extending through said washer openings, said assembly being formed of a cast conductive metal having said end members integrally formed with said portions extending through said washer openings; and

said rotor having only first and second groups of said washer-like members with the peripheral shape of each group defining a differing outer surface contour of said rotor, each of the members of said first group including arcuate peripheral portions concentric with said rotation axis interconnected by further peripheral portions in non-concentric and non-radial relation with said rotation axis,



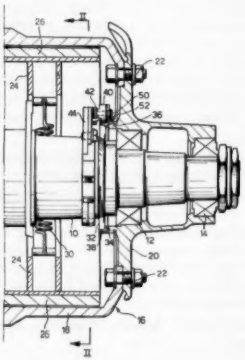
and each of the members of said second group having all peripheral portions arcuate and substantially concentric with said rotation axis to provide starting torque for said motor, and said concentric and non-concentric peripheral portions of all of said first group members being disposed with corresponding peripheral surfaces in registration.

3,848,147

ANGULAR VELOCITY DETECTOR

Giovanni Anselmino, Turin, Italy, assignor to Fiat Societa per Azioni, Turin, Italy

Filed Dec. 13, 1972, Ser. No. 314,640
Claims priority, application Italy, Dec. 14, 1971, 071085/71
Int. Cl. H02k *19/24*
U.S. Cl. 310—168 **2 Claims**



1. A vehicle wheel hub and axle assembly comprising a fixed axle, roller bearings mounted on said axle, a wheel hub supported on said bearings for rotation about the axle, and an angular velocity detector including a tone wheel mounted on said hub and an electromagnetic pickup mounted on said axle wherein said hub has an integral rim provided with a cylindrical and a lateral annular face and said tone wheel is in the form of a ring having a plurality of teeth located on the radially outer surface of the ring, a radially inner cylindrical surface seating on the cylindrical surface of the hub and a radially

inwardly projecting flange having a lateral annular face abutting the lateral annular face on the rim of the wheel hub, said assembly further comprising means for fixedly attaching said electromagnetic pickup to said axle comprising first and second arcuate half-shells shaped to fit over said axle, bolting means for bolting said first and second arcuate half-shells together and means for mounting said electromagnetic pickup on one of said arcuate half-shells.

3,848,148

STARTER MOTORS

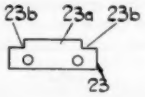
Ronald Wilson, Birmingham, England, assignor to The Lucas Electrical Company Limited, Birmingham, England

Filed Nov. 7, 1973, Ser. No. 413,455

Claims priority, application Great Britain, Nov. 10, 1972, 51994/72

Int. Cl. H02k *1/06*; **F02n** *11/02*

U.S. Cl. 310—209 **4 Claims**



1. A starter motor, for an internal combustion engine, comprising an electric motor, a shaft rotatable by said motor and carrying a pinion gear wheel, the pinion gear wheel being rotatable with said shaft and being movable axially relative to the shaft between a rest position and an operative position, and an electromagnet including an armature coupled to the pinion gear wheel said armature and said pinion gear wheel being movable axially relative to said shaft, a plurality of electromagnetic poles equi-angularly spaced around the axis of said shaft in a plane at right angles to said axis and spaced apart by an amount such that the armature can enter between the poles, the poles being spaced from the armature, in the rest position thereof, in the direction of movement of the armature relative to the shaft, each pole being shaped so that the surface of each pole presented to the armature in the rest position of the armature includes regions spaced from the armature by different distances in the direction of movement and the armature, and equally spaced from said shaft in a radial direction, a member magnetically interconnecting the poles, and an electromagnet winding associated with the poles so that when energised the winding induces a flow of magnetic flux between the poles and the armature, within the armature at right angles to its direction of movement, and between the poles, by way of said member, so that the armature is attracted to the poles, the arrrangement of said regions of the pole surfaces being chosen to achieve a predetermined attraction between the poles and the armature during the movement of the armature towards the poles.

3,848,149

ELECTRIC MACHINE ROTOR CURRENT COLLECTING DEVICE

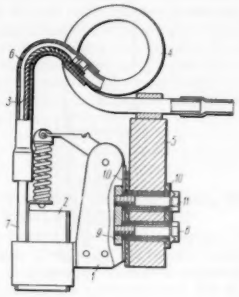
Aron Beniaminovich Shapiro, Basseinaya ulitsa, 53, kv.71; Vladimir Pavlovich Chernyavsky, Pulkovskaya ulitsa, 17, kv. 185, and Ibragim Akhmedovich Kadi-Ogly, Tallinskoe shosse, 66, kv. 180, all of Leningrad, U.S.S.R.

Filed Nov. 8, 1972, Ser. No. 304,830

Int. Cl. H02k *13/12*

U.S. Cl. 310—229 **4 Claims**

1. An electric machine rotor current-collecting device comprising electric brushes sliding over the machine slip rings, current-collecting buses and current leads connecting the electric brushes with the current-collecting buses, the electrical resistance of each current load being substantially equal to the electrical resistance of the electric brush wiping contact at the rated current of said brush, said brush current leads being made of a flexible steel conductor and enclosed in pipes of



resilient insulating material through which a liquid coolant flows.

3,848,150

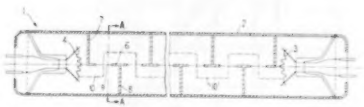
DISCHARGE LAMP WITH BAFFLE PLATES

Andre Marc Victorin Taxil, Rueil-Malmaison, and Raymond Claude Emile Boucher, La Garenne Colombes, both of France, assignors to ITT Industries, Inc., New York, N.Y.

Filed Mar. 14, 1973, Ser. No. 341,004

Int. Cl. H01j *61/10*

U.S. Cl. 313—204 **8 Claims**



1. A metal-vapor discharge lamp comprising a longitudinal envelope having a metal-vapor therein, electrodes at opposite ends of said envelope, a longitudinal baffle plate dividing said envelope into upper and lower spaces connected through apertures in said plate, and a plurality of lateral baffle plates supported in said envelope between said electrodes forming a lengthened meandering discharge path through said vapor.

3,848,151

CERAMIC ENVELOPE LAMP HAVING METAL FOIL INLEADS

Charles I. McVey, Shaker Heights, Ohio, assignor to General Electric Company, Schenectady, N.Y.

Filed Oct. 23, 1973, Ser. No. 408,523

Int. Cl. H01j *61/36*

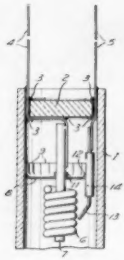
U.S. Cl. 313—217 **10 Claims**

1. An electric discharge lamp comprising:

an envelope formed of crystalline alumina ceramic tubing; ceramic closure pieces at the ends of the tubing sealed in place by a fused sealing material;

a light-emitting filling within said envelope and electrodes in the ends thereof;

and inleads connected to said electrodes and comprising thin metal foils extending through narrow apertures next to the ceramic closure pieces, said foils being wetted by and embedded in said sealing material.

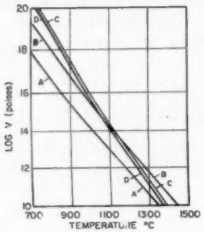


3,848,152

ELECTRIC LAMP HAVING A FUSED SILICA GLASS ENVELOPE

Peter C. Schultz, Painted Post, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed June 6, 1972, Ser. No. 260,100
Int. Cl. H01j 5/04
U.S. Cl. 313—221 3 Claims



1. An electric lamp capable of operation at a temperature of 800°–1150°C. under an internal pressure of up to 100 atmospheres comprising a light source within a glass envelope, said glass envelope being colorless and ultraviolet absorbing and consisting essentially of a high purity fused silica glass containing, as an additive to its composition on a cation mole percent basis, 0.01–1.0% of an oxide selected from the group consisting of SnO_2, GeO_2, Fe_2O_3, WO_3, MoO_3, and Ta_2O_5.

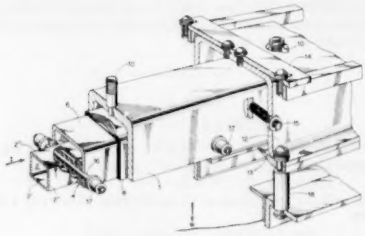
3,848,153

ELONGATED ELECTRON-EMISSION CATHODE ASSEMBLY AND METHOD

Bertram S. Quintal, Peabody, and Derek J. Maynard, Danvers, both of Mass., assignors to Energy Sciences Inc., Burlington, Mass.

Division of Ser. No. 256,887, May 25, 1972, Pat. No. 3,745,396. This application Mar. 30, 1973, Ser. No. 346,324
Int. Cl. H01j 19/06
U.S. Cl. 313—346 3 Claims

1. A method of producing an elongated cathodic electron emission, that comprises, heating the wall portions of a tubular conductive member to electron-emission temperature, reflecting the heat radiated by all of the wall portions of the tubular member except one continuously back upon such wall portions exposing said one wall portion to emit electrons therefrom, preventing said tubular member from sagging and otherwise distorting under said heating and reflected heat to provide a substantially uniform elongated electron emission, and expanding such electron emission into a substantially uniform wider electron beam curtain.

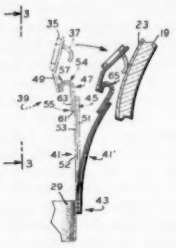


3,848,154

CATHODE RAY TUBE ANTENNA GETTER STRUCTURE COMPRISING PERMANENT PHASE TRANSFORMATION BIMETALLIC MATERIAL

Robert J. Bowes, Seneca Falls, N.Y., and Donald R. Kerstetter, Emporium, Pa., assignors to GTE Sylvania Incorporated, Stamford, Conn.

Filed Dec. 13, 1973, Ser. No. 424,411
Int. Cl. H01j 19/70, 29/00
U.S. Cl. 313—481 11 Claims



1. In a cathode ray tube having a longitudinal axis therethrough and an encompassing envelope strucutre integrally formed of a neck portion with an electron generating means spatially positioned therein, and infundibular portion, and a viewing panel having a cathodoluminescent screen disposed on the interior surface thereof, a heat deformable antenna getter structure formed to achieve predetermined positioning of the getter container relative to the interior surface of the envelope, said structure comprising:

a longitudinal positioning member formed of a strip of alpha bilaminate metallic material of predetermined flexure performance having aft and fore attachment areas, said aft attachment area being substantially terminally affixed to said electron generating means and said fore attachment areas being positioned between said longitudinal axis and said infundibular portion, said alpha bilaminate material being formed of a first lamina of an alpha active alloy material metallurgically bonded along a common interface to a second lamina of an alpha passive alloy material, said alpha active alloy material upon being subjected to an alpha predetermined temperature undergoes a metallurgical phase transformation effecting a set volume change thereof, said alpha passive material re-

maining in a substantially stable single metallurgical phase state throughout a temperature range wherein said alpha predetermined temperature is included, said positioning member having a formed primary shape effected prior to tube assembly, the alpha active lamina portion of said primary shaped positioning member upon reaching an alpha predetermined temperature during tube processing transforms to said metallurgical phase thereby imparting an arcuate movement to the positioning member in a direction radially outward from said axis producing a resultant flexure therein to effect a set secondary structural shape and movement of the positioning member toward the infundibular portion of said envelope;

a terminal getter orientation means affixed to the fore attachment area of said bilaminate positioning member, said orientation means being formed of a strip of beta bilaminate metallic material of predetermined flexure performance having proximal and distal ends of which said proximal end is affixed to the fore attachment area of said positioning member, said beta bilaminate material being comprised of first and second laminae of beta active and beta passive alloy materials respectively, said beta active material having a beta metallurgical phase transformation temperature higher than that of the alpha active lamina in said alpha bilaminate material, said terminal orientation means being discretely shaped to effect a configurative change from a primary to a secondary shaping thereby providing a related arcuate movement of said orientation means relative to said positioning member during getter vaporization processing;

a getter container associated with said terminal positioning means in a manner oriented to direct vaporized material substantially toward the interior of said tube; and

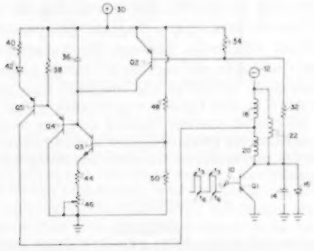
contact means associated with said terminal positioning means relative to the distal end thereof oriented toward the wall of said envelope to effect contact therewith during tube processing.

3,848,155

CRT LINEAR SWEEP CONTROL CIRCUIT

Robert J. Titus, and William J. Kelly, both of Sauquoit, N.Y., assignors to Cogar Corporation, Wappingers Falls, N.Y.

Filed Oct. 1, 1971, Ser. No. 185,540
Int. Cl. H01j *29/70*
U.S. Cl. 315—27 TD **4 Claims**



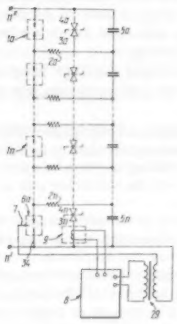
1. A sweep circuit for causing a linear sweep current to flow through a deflecting coil comprising means for applying a step voltage across said coil to initiate each sweep waveform, the main sweep current which flows through the coil responsive to the application of said step voltage being non-linear toward the end of the sweep waveform as a result of resistance in the coil circuit, and means for generating a ramp current and injecting it into said coil in the same direction as said main sweep current during each sweep waveform starting at a time when the main sweep current tends to become substantially non-linear such that the total current through said coil during each complete sweep rises substantially linearly, further including means for generating retrace pulses, means for initiating the operation of said ramp current generating means responsive to the generation of a retrace pulse, means for delaying the generation of said ramp current after the initiation of the operation of said ramp generating means for a substantial time interval after the start of each main sweep current waveform until said main sweep current waveform tends to become substantially non-linear.

3,848,156

SURGE ARRESTOR FOR HIGH VOLTAGE ELECTRIC POWER APPLICATIONS

Jury Georgievich Tolstov, Kutuzovsky prospekt, 2/1, kv. 214, Moscow; Vladimir Efremovich Skorovarov, ulitsa Tsiolkovskogo, 2, kv. 5, Dolgoprudny Moskovskoi oblasti; Boris Ilich Grinshtein, Nagatinskaya naberezhnava, 64, kv. 80, Moscow; Valentina Gavrilovna Stepanova, 2 Kozhevnichesky pereulok, 3, kv. 4, Moscow; Ivan Pavlovich Bashkatov, ulitsa Lobachevskogo, 8, kv. 21, Moscow; Jury Danilovich Vinitsky, ulitsa Chertanovskaya 39, korpus 2, kv. 56, Moscow; Valery Ottovich Balyasinsky, ulitsa 14 Parkovaya, 6, kv. 24, Moscow, and Valery Pavlovich Shmurov, ulitsa Vvedenskogo, 13, korpus 1, kv. 321, Moscow, all of U.S.S.R.

Continuation of Ser. No. 255,272, May 22, 1972, abandoned.
This application July 2, 1973, Ser. No. 375,678
Int. Cl. H02h *7/24*
U.S. Cl. 315—36 **5 Claims**



1. A surge arrestor for protecting apparatus in high-voltage electric power applications, comprising: at least one string of at least two avalanche diodes connected in series opposition, said at least one string serving for limiting voltage across the electric apparatus being protected;

at least one uncontrolled discharge device;

at least one controlled discharge device having an ignitor and being governed by a current sensor and connected in series configuration with said at least one uncontrolled discharge device to form an additional string, said discharge devices protecting the strings of avalanche diodes connected in series opposition from excessive power dissipation;

a decoupler connected between said at least one string and each of said discharge devices so that said string is in shunt with said discharge devices;

a capacitor connected in shunt with each discharge device of said additional string;

a current sensor having an output and connected in series with said at least one string of avalanche diodes;

a control unit having an input and output and connected to said at least one controlled discharge device with said input connected to the output of said current sensor and

said output coupled through a pulse transformer to said ignitor, said controlled discharge device initiating discharge of all uncontrolled discharge devices connected in series configuration thereacross when said control unit sends a trigger signal to said controlled discharge device.

3,848,157

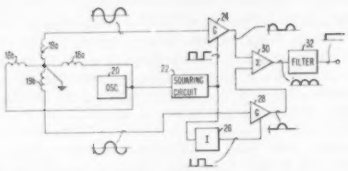
BRUSHLESS DC-TACHOMETER

Josef F. Kripl, deceased, late of Binghamton, N.Y. (by Maria A. Kripl, executrix), assignor to International Business Machine Corporation, Armonk, N.Y.

Filed Oct. 11, 1972, Ser. No. 296,735

Int. Cl. H02k *17/42*

U.S. Cl. 317—5 **3 Claims**



1. A device for sensing the rotational direction and speed of a rotatable member comprising

a signal generator having

a non-magnetic conductive rotor attached for rotation by said rotatable member; a pair of input windings proximate said rotor; a pair of output sense windings in quadrature with said input windings proximate said conductive rotor,

said output sense windings being electromagnetically coupled to said input windings solely through said rotor,

said output sense windings providing a pair of alternating output signals during rotation of said rotatable member having a phase relation and amplitude dependent on the direction and speed of rotation of said rotor;

energizing means connected to said input windings for applying an alternating energizing current of predetermined frequency and amplitude to said input windings;

and circuit means synchronized by said energizing means for converting said pair of alternating output signals from said output windings to a single unidirectional signal having a polarity and amplitude related to the direction and speed of said rotor.

3,848,158

STATIC RELAYS SYNCHRONIZED ON THE PASSAGE TO ZERO

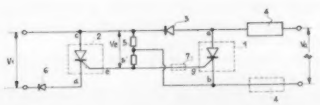
Guy H. Dumas, Paris, France, assignor to Silec-Semi-Conducteurs, Paris, France

Filed June 7, 1973, Ser. No. 367,938

Claims priority, application France, Nov. 29, 1972, 72.42444

Int. Cl. H02h *7/22*

U.S. Cl. 317—11 A **10 Claims**



1. A solid-state, static relay circuit comprising:

a pair of power terminals adapted to be connected in series with a load and a source of alternating or rectified alternating supply voltage,

first controllably conductive semiconductor means having a pair of main electrodes and a control electrode, said pair of main electrodes being connected to said pair of power terminals,

second controllably conductive semiconductor means having a pair of main electrodes and a control electrode, said control electrode and one of said main electrodes of said second controllably conductive semiconductor means being connected to said control electrode and one of said main electrodes of said first controllably conductive semiconductor means, and

a pair of control terminals adapted to be connected to a control signal source and being connected to said pair of main electrodes of said second controllably conductive semiconductor means,

whereby said static relay circuit can be triggered only when a control signal is provided at said pair of control terminals and said supply voltage passes through approximately zero or is lower than a threshold value which is related to the amplitude of said control signal.

3,848,159

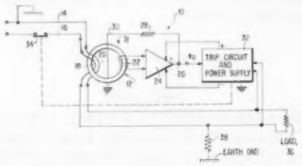
GROUND FAULT DETECTOR CIRCUIT WITH FEEDBACK TO SENSOR

Dudley D. Nye, Jr., and Daniel J. Eisenstadt, both of Fort Lauderdale, Fla., assignors to Airpax Electronics Incorporated, Cambridge, Md.

Filed June 18, 1973, Ser. No. 370,754

Int. Cl. H02h *3/28*

U.S. Cl. 317—18 D **19 Claims**



1. Apparatus for detecting ground faults between one of a plurality of transmission lines and earth-ground comprising:

a magnetically permeable core surrounding the transmission lines for generating a magnetic flux proportional to a current differential between the transmission lines; means coupled to said core for producing a signal having an amplitude related to said magnetic flux; and means responsive to said signal for generating a flux opposing said differential current induced flux, the amplitude of said signal being proportional to said current differential with core permeability characteristics being substantially removed.

3,848,160

CIRCUIT FOR DETECTING PHASE UNBALANCE IN A THREE PHASE SUPPLY

David Richard Boothman, Ennismore, and David Walter Nutt, Peterborough, Ontario, both of Canada, assignors to Canadian General Electric Company, Limited, Toronto, Ontario, Canada

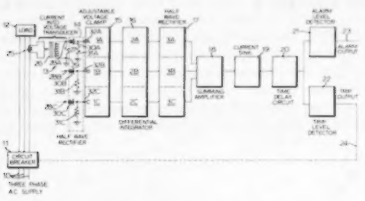
Filed May 21, 1973, Ser. No. 362,366

Int. Cl. H02h *3/26*

U.S. Cl. 317—27 R **9 Claims**

1. A circuit for detecting the largest of three electric signals of like polarity comprising three differential integrating circuits, each circuit having two inputs and one output; means for applying two different ones of said three signals to the

respective inputs of each integrating circuit, each one of said integrating circuits integrating the difference between its input signals and giving an output signal proportional to this difference; means for selecting signals of the same polarity from



said output signals; means for summing all said selected signals and outputting a voltage representative of the algebraic sum thereof; and means for detecting the signal level of the sum of said selected signals.

3,848,161

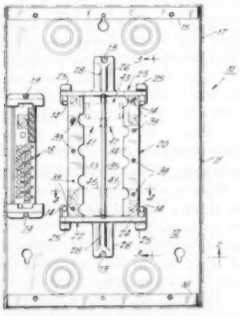
PANELBOARD WITH PROVISION FOR OPTIONAL USE WITH MAIN BREAKER OR MAIN LUGS WITH SPACED INSULATORS SUPPORTING MAIN BUS BARS

Ralph C. Clement, Bellefontaine, Ohio, assignor to I-T-E Imperial Corporation, Spring House, Pa.

Filed Sept. 5, 1973, Ser. No. 394,442

Int. Cl. H02b *1/04*

U.S. Cl. 317—119 **6 Claims**



1. An electric distribution panel including a relatively shallow panlike housing; first and second inulsator members of substantially equal size and shape mounted in spaced relation to the rear wall of said housing and extending forward therefrom; first and second elongated main conductors extending generally parallel to each other in a common plane parallel to said rear wall; each of said insulator members including a plurality of recesses wherein the ends of the conductors are entered to provide the sole support operatively mounting the conductors to the insulator means; a circuit breaker locating and supporting rib positioned between said main conductors with the ends of said rib being supported by said insulator members; each of said main conductors, at locations spaced along the length thereof, being provided with means defining circuit breaker connecting points; each of said insulator members including first and second guide apertures positioned in the vicinity of the respective first and second main conductors and slightly forward thereof to direct energizing cables for said panel to cable receiving openings of main lug means positioned inboard of the insulating members and connected to those of said connecting points at the ends of said conductors.

3,848,162

METHOD AND APPARATUS FOR CHARGING A SUPERCONDUCTIVE COIL

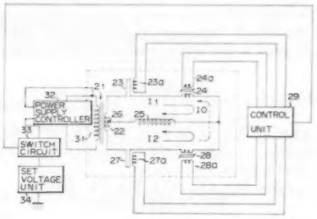
Hayao Ichikawa, Yokosuka, and Shinhachi Utsunomiya, Yokohama, both of Japan, assignors to The President of the Agency of Industrial Science and Technology, Tokyo, Japan

Filed July 11, 1973, Ser. No. 378,194

Claims priority, application Japan, July 11, 1972, 47-68708; July 11, 1972, 47-68709

Int. Cl. H01f *7/18*

U.S. Cl. 317—123 **11 Claims**



1. A method for charging a superconductive coil in a flux pump circuit provided in a very low temperature atmosphere and including a power source transformer and a first and a second circuit provided on the secondary winding side of the power source transformer and each led through a respective control switch to a superconductive coil, comprising the steps of:

during one half cycle, applying a rectangular wave voltage to a primary winding of the power source transformer in such a state that a control switch of the first circuit is turned ON and a control switch of the second circuit is turned OFF;

turning ON the second circuit when the power source transformer is saturated to cause the primary winding voltage to be reduced to zero;

applying a small opposite polarity voltage to the primary winding to cause a short-circuit current opposite in direction to electric current through the first circuit to be generated;

operating the control switch of the first circuit when the current of the first circuit is reduced to be zero; and supplying zero voltage to the primary winding for a predetermined time period equal at shortest to the time necessary for the control switch to complete its operation;

the other half cycle being identical with said one half cycle except the polarity is opposite; and

said steps being repeated so that charging current through the superconductive coil is cumulatively added.

3,848,163

TIMING RELAY

Helmut Schleicher, Berlin, Germany

Filed Nov. 12, 1970, Ser. No. 88,941

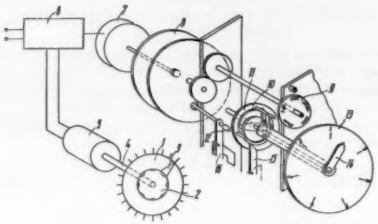
Claims priority, application Germany, Nov. 12, 1969, 1957911

Int. Cl. H01h *47/18*

U.S. Cl. 317—141 R **3 Claims**

1. In a timing relay designed for minimizing error in the operation of said relay comprising, a timing relay, a direct current motor coupled to said relay to provide for its actuation, a potentiometer electrically connected to said motor to control its speed of revolution, said relay incorporating time

setting means to provide for adjustment in a timed opeation, and adjusting means connecting to said potentiometer and



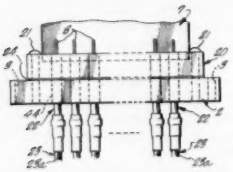
which is capable of being set to regulate the speed of said motor in relation to the timing period set for operation of said relay.

3,848,164

CAPACITIVE ELECTRICAL CONNECTORS

Richard F. Otte, Los Altos, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed July 11, 1972, Ser. No. 270,812
Int. Cl. H01g *1/035*
U.S. Cl. 317—256 **9 Claims**



1. An electrical connector for providing a make-and-break connection between first electrical apparatus having a first set of electrical signal conductors, at least one of which comprises a common voltage node of said first electrical apparatus, and second electrical apparatus having a second set of electrical signal conductors, at least one of which comprises a common voltage node of said second electrical apparatus, comprising first electrically conductive block means for electrical connection to the voltage node of said first electrical apparatus,

second electrically conductive block means including means for electrical connection to the voltage node of said second electrical apparatus,

said first and second block means being physically mounted together with adjacent surfaces thereof separated only by a dielectric but closely contiguous to one another and forming a capacitance for providing capacitive coupling for carrying an alternating current signal from the voltage node of said second electrical apparatus to the voltage node of said first electrical apparatus, and at least another of the first signal conductors being electrically connected to at least another of the second signal conductors when said first and second block means are so mounted together, and

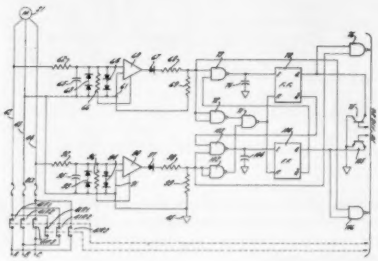
coupling means electrically connecting together said first and second block means for providing a direct current path therebetween.

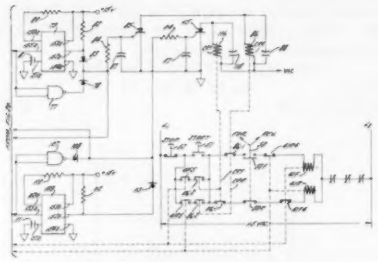
3,848,165

BIDIRECTIONAL ZERO SPEED SWITCH

Francis E. Heiberger, Elmhurst, Ill., assignor to Danly Machine Corporation, Chicago, Ill.

Filed Oct. 25, 1973, Ser. No. 409,437
Int. Cl. H02p *1/40*
U.S. Cl. 318—207 R **6 Claims**





1. In a control circuit for a reversible polyphase a.c. induction motor having supply lines for providing polyphase voltage to the motor, the combination comprising a plurality of sensing means for sensing the voltage on the motor supply lines resulting from the applied voltage and the generator action of the motor and in response thereto emitting a plurality of output signals, logic means for comparing the relative phase of the plurality of output signals thereby to determine the presence and direction of motor rotation, and interlocking means responsive to the logic circuitry for selectively interrupting the motor control circuit thereby to allow voltage to cause either direction of rotation to be applied to the motor while at rest, but to allow voltage to be applied to the motor while coasting only if that voltage will cause the motor to continue in its direction of coast.

3,848,166

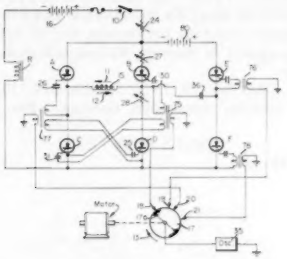
SILICON CONTROLLED RECTIFIER TYPE INVERTER FOR ELECTRIC MOTORS

Joseph Jamieson, Plantation, Fla., assignor to Louis W. Parker, Ft. Lauderdale, Fla.

Filed Jan. 22, 1973, Ser. No. 325,785
Int. Cl. H02p *5/28, 7/40*
U.S. Cl. 318—227 **14 Claims**

1. In combination, an electric motor having a rotor and at least one stator coil, a bridgetype current inverter connected to said motor, said inverter comprising first and second pairs of silicon controlled rectifiers connected to said stator coil of said motor, said first pair of rectifiers being poled in like direction to one another and in opposite direction to said

second pair of rectifiers relative to said stator coil whereby conduction of said first pair of rectifiers effects current flow via said first pair in a first direction through said stator coil and conduction of said second pair of rectifiers effects current flow via said second pair in the opposite direction through said stator coil, said reversals in stator coil current flow direction cooperating with said rotor to produce a torque between said stator coil and rotor operative to effect rotary movement of said rotor, first control means coupled to each of the rectifiers in said first and second pairs of rectifiers for rendering alternate ones of said pairs of rectifiers conductive during alternate mutually exclusive periods of time, second control means operative during time intervals between said periods of time for shutting off the conducting pair of said rectifiers, said



second control means including a capacitor, and selectively operable switch means for connecting said capacitor across one of the rectifiers in the conducting pair of said rectifiers, said first and second control means comprising a rotary commutator connected to the rotor of said motor and driven thereby, said commutator having a plurality of outputs which are energized at a rate and in a sequence determined by the rotation of said motor rotor, and means coupling said plurality of sequentially energized outputs to said switch means and to the gate electrodes of each of the rectifiers in said first and second pairs of rectifiers in a predetermined sequence to control the operating states of said switch means and rectifiers.

3,848,167

ARRANGEMENT FOR GENERATING A CLOCK FREQUENCY SIGNAL FOR RECORDING INFORMATION ON A DATA CARRIER

Dieter Ratschmeier, Schwaig; Reinhard Stark, and Jurgen Wenk, both of Nurnberg, all of Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany

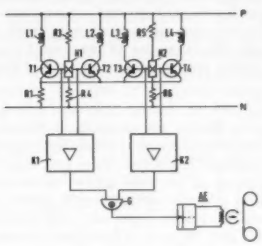
Filed June 27, 1972, Ser. No. 266,642

Claims priority, application Germany, July 1, 1971, 2132783

Int. Cl. G11b *5/00;* **H03k** *3/69*

U.S. Cl. 318—254 **4 Claims**

1. Arrangement for generating a clock frequency signal for recording digital information on a data carrier such as a magnetic tape or the like driven by a brushless direct-current drive motor having a permanent magnet rotor, a stator winding and electronic circuit means for inducing voltages in the stator winding in dependence upon the changing position of the rotor to produce a rotating stator field, the arrangement comprising monitoring means connected to the electronic circuit means for providing a first signal varying in correspondence to the rotating stator field, and signal conversion means connected to said monitoring means for converting said first signal into said clock frequency signal synchronized to the speed of rotation of the rotor, said clock frequency signal



alternately assuming one of two values, the time of transisition between said values being negligible.

3,848,168

SPEED CONTROL SYSTEM FOR A-C SUPPLIED UNIVERSAL MOTORS

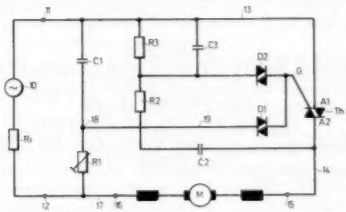
Friedrich Hornung, Stuttgart, Germany, assignor to Robert Bosch GmbH, Gerlingen-Schillerhohe, Germany

Filed May 3, 1973, Ser. No. 356,968

Claims priority, application Germany, June 19, 1972, 2229694

Int. Cl. H02p *7/62*

U.S. Cl. 318—331 **14 Claims**



1. Speed control system for a-c supplied series wound commutator universal motors (M) comprising:

controllable semiconductor switching means (Th) connectable for each half phase of the a-c supplied to the motor; means triggering said switching means (Th) selectively at a first fixed, preset phase angle ($\phi 1$) or at a second fixed, preset phase angle ($\phi 2$), wherein said second phase angle is greater than said first phase angle ($\phi 2 > \phi 1$);

and means connected to the motor and sensitive to motor loading, controlling said triggering means to trigger said semiconductor switching means, selectively, at said first preset phase angle ($\phi 1$) or said second preset phase angle ($\phi 2$), to provide trigger pulses to the controllable semiconductor switching means (Th), statistically distributed, in time, in accordance with loading on the motor.

3,848,169

DYNAMIC BRAKING CONTROL

Tetsumasa Asano; Takaaki Soga, and Mitsuro Kitano, all of Himeji, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1973, Ser. No. 351,586

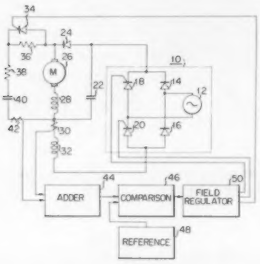
Claims priority, application Japan, Apr. 18, 1972, 47-38865

Int. Cl. H02p *3/14*

U.S. Cl. 318—376 **6 Claims**

1. A control system for controlling dynamic braking of a dc motor, comprising, in combination, a dc motor including an

armature and a field winding, excitation means for separately exciting said field winding of the dc motor, first sensor means for sensing a current flowing through said field winding to derive a first electrical quantity representative of the sensed magnitude of the current, second sensor means for sensing a voltage induced across said armature to derive a second electrical quantity representative of the sensed magnitude of the voltage, a adder means connected to said first and second



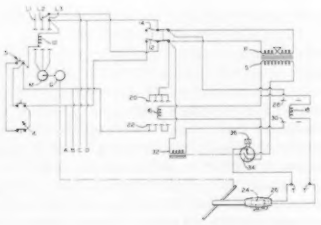
sensor means to form the sum of said first and second electrical quantities, field regulator means electrically coupled to said adder means to control said excitation means to regulate the current flowing through said field winding to maintain the sum of said first and second electrical quantities from said adder means constant, and said second sensor means comprising means to derive an electrical quantity representative of a sensed magnitude of a rotational speed of the dc motor.

3,848,170

CONTROL SYSTEM FOR MOTOR-GENERATOR SET

David Ocampo Morales, Benito Diaz de Gamarra nr. 37, Circuit, Oradores, Ciudad Satelite, Mexico

Filed Jan. 11, 1973, Ser. No. 322,743
Claims priority, application Mexico, Oct., 1972, 139273
Int. Cl. B23k *9/10*
U.S. Cl. 318—487 **1 Claim**



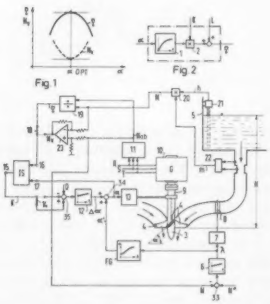
1. In a control system for a motorgenerator set: a high voltage system for energizing said motor, a low voltage system for controlling the connection of said high voltage system to said motor and including a manual switch, said manual switch being operable upon actuation to connect said high voltage system to said motor, and time delay means operable upon release of said manual switch to maintain the connection of said high voltage system to said motor for a predetermined period of time; said high voltage system comprising a source of power, a first contactor between said source and said motor and having a first coil operable when energized to connect said source to said motor, a second contactor having a second coil operable when energized to cause energization of said first coil, a step down transformer having a primary side connected to said source and having a secondary side, said low voltage system including said secondary side of said transformer, said time delay means comprising a timer having a blade between said second coil and the secondary side of said transformer operable when closed to connect said secondary side of the transformer to said second coil, said timer having a coil operable when energized to close said blade, means for causing said blade to remain closed for a predetermined time after said timer coil is deenergized, a third contactor connected to said timer coil and having a third coil operable when energized to cause energization of said timer coil, and said manual switch being connected to said third coil and operable when actuated to cause energization of said third coil.

3,848,171

ARRANGEMENT FOR THE OPTIMUM SETTING OF THE ROTOR BLADES OF WATER TURBINES

Winfried Speth, and Fritz Loffelmann, both of Erlangen, Germany, assignors to Siemens Aktiengesellschaft, Munchen, Germany

Filed Dec. 29, 1972, Ser. No. 319,733
Claims priority, application Germany, Dec. 30, 1971, 2165635
Int. Cl. G05b *11/32*
U.S. Cl. 318—561 **5 Claims**



1. In a water turbine, apparatus for optimizing the turbine efficiency comprising:

a. means to develop a first output signal representative of power output by the turbine;

b. means to develop a second output signal representative of power input;

c. means to develop from said first and second signals a third signal representing one of the efficiency and power loss of the turbine;

d. means having as one input one said third signal and as a second input, a fourth signal representing the angle of the rotor blade setting to develop a fifth signal representing the gain factor within the turbine; and

e. means, having said fifth signal as an input, to control the turbine blade setting such as to cause said gain factor to become zero.

3,848,172

YAW DAMPER SYNCHRO SYSTEM FOR AIRCRAFT

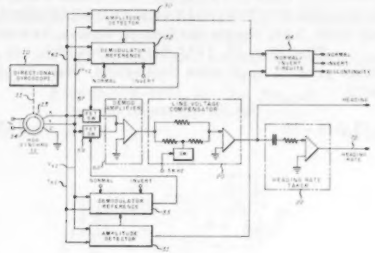
Ronald E. Thomas, Phoenix, Ariz., assignor to Sperry Rand Corporation, Great Neck, N.Y.

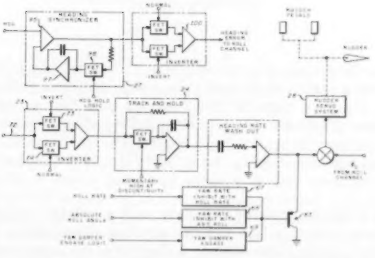
Filed Aug. 30, 1972, Ser. No. 284,781
Int. Cl. G05d *1/08;* **B64c** *13/18*
U.S. Cl. 318—586 **14 Claims**

1. In a lateral axis control system for an aircraft automatic flight control system, the combination comprising

a stable directional reference means,

means including a synchro control transformer having a rotor part positioned by said reference means and a stator part fixed to the aircraft and switching, demodulating and inverting means controlled by the relative positions of said rotor and stator parts for providing a continuous triangular wave d.c. signal voltage having substantially linear leading and trailing edge sectors corresponding to variations in aircraft heading between substantially plus and minus thirty degree sectors of aircraft heading and points of discontinuity at the leading and trailing edge junctions of said triangular wave,





means responsive to said d.c. signal for deriving a signal proportional to the slope of said leading and trailing edge sectors and thereby proportional to the rate of change of aircraft heading, and

means responsive to said switching means for tracking and holding the value of said rate signal at said points of discontinuity for a predetermined time interval whereby to eliminate any rate signal transients at said points of discontinuity.

3,848,173

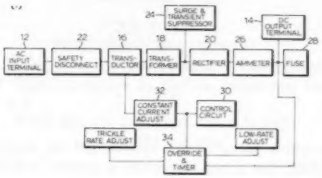
STORAGE BATTERY CHARGING APPARATUS

Alfred Max Hase, 6 Manorwood Rd., Scarborough, Ontario, Canada

Filed Nov. 8, 1972, Ser. No. 304,858
Int. Cl. H02j *7/04*
U.S. Cl. 320—23 **9 Claims**

1. In a storage battery charging apparatus which is adapted at its input for connection to a source of electrical energy, and at its output to the terminals of a storage battery; said apparatus including controllable synchronous switch means adapted to control the rate of electrical energy input; said apparatus having a multirate charging current output program, including a high charging rate at the beginning of the program, a controlled and tapered transition from high to low charging rate, and a continuous trickle charging rate at the end of the program until the battery is disconnected or the charging program terminated; said high charging rate and said trickle charging rate each having a substantially constant current output; the improvement comprising a control circuit and an override and timer circuit, where:

a. said control circuit includes means to initiate operation of a taper charge mode of operation of said battery charger apparatus when the terminal voltage of the battery reaches a predetermined level, said control circuit including means to drive said controllable synchronous switch so as to reduce the rate of electrical energy input by controlling the operating period of said synchronous switch, in order to maintain the output voltage of said battery charger apparatus constant at said predetermined level until such time as the controlled operation period of said synchronous switch reduces to a perdetermined minimum period, or until expiration of a predetermined amount of time from the beginning of the charging program as determined by said override and timer circuit; and



b. said override and timer circuit includes means for monitoring and overriding the control circuit, including

i. a driven time-switch whose operation is initiated at the beginning of said charging program;

ii. first current control means made operable at the beginning of said charging program to maintain said output current at a first predetermined value;

iii. first override means made operable by said time-switch at a first predetermined time during said charging program to override said control circuit if the output current of said apparatus is higher than a second predetermined value which is lower than said first predetermined value, so as to reduce said output current to said second predetermined value; and

iv. second override means made operable by said time-switch to override said control circuit at a second predetermined time which is later than said first time during said charging program, to reduce said output current to said continuous trickle charging rate

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3,848,174

HIGH VOLTAGE SOLID-STATE RECTIFIER SYSTEM

Chester C. Thompson, Roslyn Heights; Severt E. Olsen, Staten Island, and Raymond J. Loby, Plainview, all of N.Y., assignors to Radiation Dynamics, Inc., Westbury, L.I., N.Y.

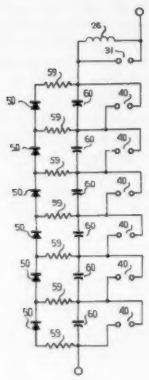
Filed May 21, 1973, Ser. No. 362,060
Int. Cl. H02m *1/18*
U.S. Cl. 321—11 **20 Claims**

1. A high voltage solid-state rectifier assembly, comprising: an array of multiple series-connected solid state diodes, said array being divided into groups of said series-connected diodes;

a plurality of electrically conductive shield sections, each housing a respective group of said diodes, said shield sections being electrically isolated from one another and arranged end to end, each shield section being arranged to overlap the shield section adjacent thereto to provide radio frequency shielding for said array and to form a capacitance element between adjacent shield sections, the capacitive elements between successive shield sec-

tions forming a series capacitance chain along the length of said array; and

a plurality of resistive elements, each connected between a



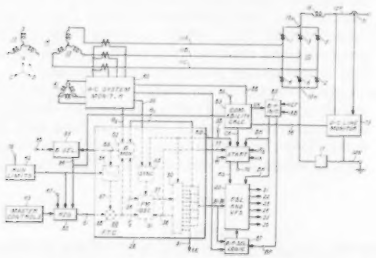
respective group of said diodes and the shield section housing that group to provide a graded potential along said shield sections.

3,848,175

STARTING INHIBIT SCHEME FOR AN HVDC CONVERTER

Donald M. Demarest, Wallingford, Pa., assignor to General Electric Company, Philadelphia, Pa.

Filed Oct. 24, 1973, Ser. No. 409,210
Int. Cl. H02h 7/14
U.S. Cl. 321—11 **20 Claims**



1. For automatically starting or restarting an HVDC electric power converter comprising a plurality of controllable electric valves connected in a bridge configuration between first and second sets of power conductors, said first set of conductors being associated with a polyphase alternating voltage network and said second set being adapted to conduct direct current which periodically is commutated from one valve to another upon firing said valves in a predetermined normal sequence during each cycle of alternating voltage when the converter is running, said converter including means for cyclically firing said valves in said sequence and at a firing angle that can vary within a permissible range as a function of a variable control signal, the improvement comprising:

a. blocking means effective when not disabled for causing the firing means to idle, in which state said cyclic valve firings are suspended;

b. starting means operative in response to certain conditions for disabling said blocking means, whereupon said firing means is allowed to start or to restart the converter; and

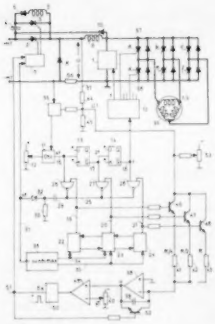
c. means coupled to said first and second sets of conductors and to said firing means for calculating the commutating ability of the converter and for inhibiting operation of said starting means if said commutating ability is insufficient to ensure successful commutation once the converter is running.

3,848,176

CONTROL CIRCUIT FOR AN INVERTER WITH A VARIABLE OUTPUT VOLTAGE AND FREQUENCY

Marcel Etter, 3 bis, chemin des Pontets, Geneva, Switzerland

Filed Mar. 26, 1973, Ser. No. 344,528
Claims priority, application Switzerland, Mar. 30, 1972, 4794/72
Int. Cl. H02m 7/52
U.S. Cl. 321—18 **8 Claims**



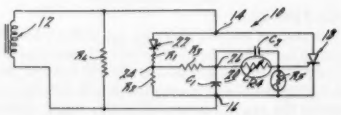
1. Control circuit for an inverter with a variable voltage and output frequency, in which the variation of amplitude of the output voltage is provided by a chopper of the supply voltage, including means of controlling the frequency of the chopper and the output frequency, characterized by the fact that the frequency of the chopper is a multiple of the inverter frequency, the means for controlling the frequency of the chopper being set so as to modify automatically said multiple when the frequency of the chopper leaves a predetermined range.

3,848,177

REGULATING CIRCUIT

George E. Gynn, Fort Wayne, Ind., assignor to Syncro Corporation, Oxford, Mich.

Division of Ser. No. 244,778, April 17, 1972. This application Apr. 26, 1973, Ser. No. 354,662
Int. Cl. H02p 9/26
U.S. Cl. 322—73 **4 Claims**



1. A method for calibrating a regulating circuit for a permanent magnet alternator utilizing an SCR having a gate electrode comprising the steps of:

depositing a resistive film which connects with said gate electrode having a temperature coefficient of resistance which is selected in accordance with the firing sensitivity of said SCR; and

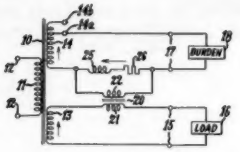
adjusting the value of said resistor generally at a predetermined temperature of said SCR by removal of a portion of said resistive film so as to increase the resistance of said resistive film so that said SCR fires substantially at a predetermined gate signal level at said predetermined temperature.

3,848,178

COMBINED POWER AND INSTRUMENT POTENTIAL TRANSFORMER

Louis W. Marks, Pittsfield, Mass., assignor to General Electric Company

Filed Dec. 9, 1971, Ser. No. 206,549
Int. Cl. G05f 7/00; G01r 19/16
U.S. Cl. 323—6 **4 Claims**



1. A combined power and instrument potential transformer comprising a magnetizable core, a single high voltage primary winding on said core having a pair of input terminals, an instrument secondary winding on said core adapted to supply across a pair of output terminals a low voltage proportional in magnitude and similar in phase to voltage applied to said input terminals, a power secondary winding on said core having opposite ends connected to a pair of load terminals, a current transformer having a primary winding connected in series circuit relation with said power secondary winding across said load terminals and including a secondary compensating winding, a compensating impedance connected across said secondary compensating winding, and means connecting said compensating impedance in series circuit relation with said instrument secondary winding between said output terminals, said compensating impedance being so connected that voltage drop thereacross resulting from current in said secondary compensating winding is in aiding voltage relation with voltage induced in said instrument secondary winding by flux in said core.

3,848,179

POWER SUPPLYING DEVICE

Takashi Kayama, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sept. 21, 1973, Ser. No. 399,303
Claims priority, application Japan, Sept. 22, 1972, 47-95342
Int. Cl. G05f 1/00
U.S. Cl. 323—22 T **5 Claims**

1. A power supplying device comprising:

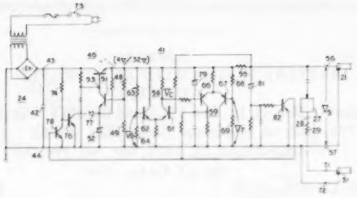
A. power supply output terminals;

B. a voltage source;

C. a voltage regulator connected to said source to be energized thereby and comprising voltage regulator output circuit;

D. an impedance connecting said output circuit to said output terminals; and

E. a comparison circuit to compare the voltage across said output terminals with a voltage in said output circuit to obtain a voltage ratio in said comparison circuit, said comparison circuit being connected to said regulator to control the operation thereof to keep the voltage across



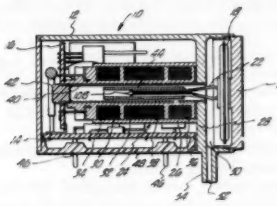
said output terminals low when the voltage ratio in said comparison circuit differs from a predetermined value.

3,848,180

PRESSURE TRANSDUCER

Joseph L. Jonke, Anaheim, and Richard N. Clarke, Santa Ana, both of Calif., assignors to Gulton Industries, Inc., Metuchen, N.J.

Filed Jan. 17, 1973, Ser. No. 324,549
Int. Cl. G01r 33/00
U.S. Cl. 323—51 **11 Claims**



1. A method for temperature compensating a plurality of like temperature compensated pressure transducers, each of the type having

a linear variable differential transformer having a primary winding, a first secondary winding, a second secondary winding and a drive winding and whose output signal magnitude varies with temperature; a series capacitor of a value preselected to provide a series resonant circuit with the secondary windings of a selected frequency; an oscillator for excitation of the primary winding of the transformer and including a frequency control resistor for determining the nominal output frequency of the oscillator; means connecting the first secondary winding, the second secondary winding and the series capacitor in series to form said series resonant circuit; a demodulator of the voltage doubler type including the drive winding; and means for applying the series resonant circuit output to the demodulator to produce an output signal in response to primary winding excitation,

in which, for a first one of said plurality of transducers, the two resistance values of the frequency control resistor which produce oscillator frequencies corresponding at a given pressure to the peak output signal and the output signal having minimum variation with temperature for the first transducer have been determined, comprising:

energizing other of the remainder of said transducers at a given pressure at a plurality of frequency control resistor resistance values to determine the resistance of frequency control resistances for said transducers which produce peak transducer outputs at the given pressure; and

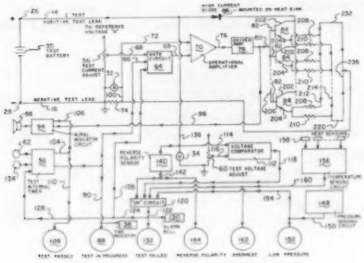
connecting in the oscillators of said transducers frequency control resistors whose resistances are reduced from their peak output resistance values by approximately the difference in resistance between the peak and minimum variation resistances of the first one of said transducers.

3,848,181

BATTERY TESTER WITH AN IMPROVED LOAD CIRCUIT

James O. Hebert, Jr., Box 1193, and Donald F. Fitzgerald, Box 791, both of Mississippi State, Miss. 39762

Filed Sept. 18, 1973, Ser. No. 398,489
Int. Cl. G01n 27/46
U.S. Cl. 324—29.5 **14 Claims**



1. An electrical load circuit for a battery tester for testing batteries having positive and negative terminals and wherein the load current that is allowed to pass through the battery is sensed and controlled, comprising:

a. a plurality of test leads, each lead having attached thereto a terminal battery connector;

b. reverse current means, associated with one of the test leads, for preventing a reverse flow of current;

c. a plurality of power transistors, associated with the test leads, said power transistors being connected in parallel to each other and in series with the reverse current means;

d. at least a first bus structure associated with the power transistors;

e. at least a second bus structure associated with the power transistors and electrically insulated at its one end from the first bus structure and electrically connected through its other end to the first bus structure, the bus structures also being electrically connected to one of the test leads; and

f. at least two emitter bias resistors being connected at a common point to the emitters of each power transistor, the opposite end of one bias resistor being connected to the first bus and the opposite end of the other bias resistor being connected to the second bus.

3,848,182

APPARATUS FOR LIMITING PHASE-ANGLE RESPONSE RANGE, PARTICULARLY IN EDDY CURRENT TESTING APPARATUS

James Gerner, Elmhurst, and Peter J. Suhr, Garden City, both of N.Y., assignors to Magnetic Analysis Corporation, Mt. Vernon, N.Y.

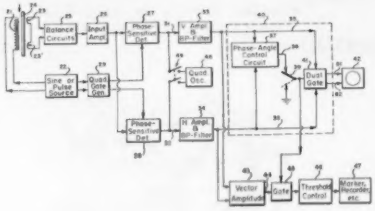
Filed Aug. 15, 1973, Ser. No. 388,568
Int. Cl. G01r 33/12
U.S. Cl. 324—40 **6 Claims**

1. In eddy current testing apparatus including test coil means energized to induce eddy currents in an object under test and producing an output signal whose amplitude and phase change with variations in the object, means for limiting the range of phase angles within which signals are supplied to an output circuit for indication or classifying which comprises

a. means for producing quadrature signal components of said output signal,

b. adjustable sine-cosine multiplying means for receiving said quadrature signal components and multiplying the components by respective sine and cosine functions to yield respective signals of substantially equal amplitude at a phase angle of the quadrature signal components depending on the setting of the multiplying means,

c. combining means responsive to said respective signals for yielding an output of minimum value when the signals are of substantially equal amplitude and of progressively greater value as the signals become unequal,



d. threshold means responsive to the output of said combining means for producing a gate signal when the output lies within a range corresponding to a limited phase angle range of said quadrature components,

e. a gate circuit having an input supplied with a signal corresponding to at least one of said quadrature signal components and having an output,

f. means for supply said gate signal to said gate circuit to limit the output thereof to signals lying within a restricted range of phase angles,

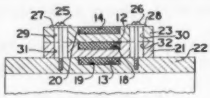
g. and means for supplying the output of said gate circuit to indicating or classifying means.

3,848,183

EDDY CURRENT TESTING SYSTEM HAVING CONCENTRIC COILS, ONE BEING MOVABLE FOR BALANCING

Heino Puidak, Hoffman Estates, Ill., assignor to Magnaflux Corporation, Chicago, Ill.

Filed Apr. 20, 1973, Ser. No. 352,916
Int. Cl. G01r 33/12
U.S. Cl. 324—40 **4 Claims**



1. In an eddy current testing system for measuring characteristics of a specimen, a test coil unit arranged to receive the specimen therein, said test coil unit comprising coil form means including first, second and third annular forms each having an annular slot in the outside surface thereof, said forms being concentric and in radial alignment with said first form being fitted inside said third form and with said third form being fitted inside said second form, first and second windings in said annular slots of said first and second forms

and having approximately the same axial and radial dimensions, wire sizes and members of turns, a third winding in said annular slot of said third form, an AC source connected to said third winding to develop AC voltages in said first and second windings, one of said first and second forms being adjustably positionable in an axial direction relative to the other to a position such as to equalize the instantaneous voltages developed in said first and second windings with no specimen disposed in said coil unit, and locking means for fixing said one of said forms in said position, and measuring means directly connected to said first and second windings to measure instantaneous differences in the voltages developed across said windings.

3,848,184

METAL SENSING APPARATUS WITH A PROTECTIVE COVER OF A GROUNDED CONDUCTIVE PLASTIC MATERIAL TO PREVENT ACCUMULATION OF ELECTRICAL CHARGES

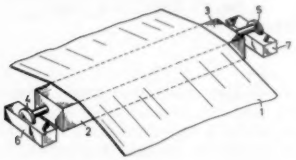
Ludwig Zerle, Mering, and Klaus Scharm, Augsburg, both of Germany, assignors to Firma Erhardt & Leimer KG, Ausburg, Germany

Filed June 1, 1973, Ser. No. 365,966

Claims priority, application Germany, June 7, 1972, 2227627

Int. Cl. G01r *33/00, 33/12*

U.S. Cl. 324—41 **9 Claims**



1. In a sensing system for detecting metallic objects of the type having a beam shaped sensor head containing detector coil means and a protective cover over the coil means, whereby foreign metallic objects passed over the cover are detected by the coil means; the improvement wherein said beam shaped sensor head is comprised of a carrier plate, said coil means being mounted on said carrier plate, said cover being of an electrically conducting synthetic material, the edges of said cover being bonded to said carrier plate, and means grounding said cover, said cover having a resistivity that prevents accumulation of electrical charges on said cover without impairing the detecting function of said coil means.

3,848,185

CIRCUIT ARRANGEMENT FOR DETERMINING THE VOLTAGE FRACTION RATIO OF A VOLTAGE DIVIDER

Michael Hentschel, Waldhausen, Germany, assignor to Sina Aktiengesellschaft fur Instrumentierung und Automatik, Zurich, Switzerland

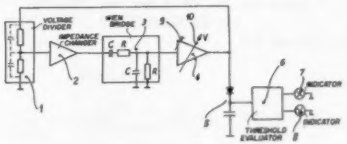
Filed Aug. 1, 1973, Ser. No. 384,420

Claims priority, application Switzerland, Aug. 4, 1972, 11555/72

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **26 Claims**

1. A circuit arrangement for determining the ratio of a voltage divider including two impedances joined at a junction and said impedances including reactance components and including resistance components at least one of which can be varied to represent a physical magnitude, said circuit arrangement comprising an oscillator circuit including an oscillation amplifier, a feedback loop coupled between an input and the output of the amplifier and contributing attenuation to the general attenuation included in the oscillator circuit, and said loop having said voltage divider inserted as an attenuator in the feedback loop, means for adjusting the gain of the amplifier to a level at which oscillation is sustained by overcoming said general circuit attenuation and the attenuation of said voltage divider, and indicator means coupled to said amplifier output and operative to indicate the state of oscillation or non-oscillation of the oscillator circuit.



3,848,186

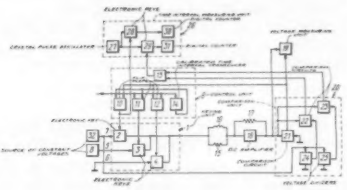
METHOD OF MEASURING PARAMETERS OF COMPLEX ELECTRIC CIRCUIT AND DEVICE FOR EFFECTING SAME

Alexandr Ivanovich Martyashin, ulitsa Kirova, 69, kv. 59; Andrei Elizarovich Morozov, ulitsa Uritskogo, 44/10, kv. 62; Eduard Konstantinovich Shakhov, ulitsa Gladkova, 13, kv. 5, and Viktor Mikhailovich Shlyandin, ulitsa Lermontova, 12, kv. 17, all of Penza, U.S.S.R.

Filed Aug. 24, 1973, Ser. No. 391,315

Int. Cl. G01r *27/00*

U.S. Cl. 324—57 R **12 Claims**

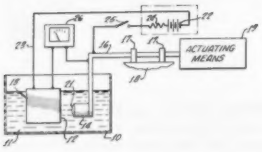


1. A method of measuring the parameters of a complex electric circuit, comprising the steps of applying a constant voltage directly across its input in case the components thereof are connected in parallel; comparing the current flowing through the complex electric circuit in case the components thereof are connected in parallel, with two reference currents, one with the lesser value exceeding the constant component of said current; measuring the time interval between the instants said current equals said two reference currents; reversing the polarity of said constant voltage after a calibrated time interval which exceeds the value of the time component of the complex electric circuit counting from the instant said constant voltage is applied to said circuit; measuring another time interval counting from said instant of reversing the polarity of said constant voltage until the instant the current flowing through said complex electric circuit attains a value approximately equal to zero; cutting off said constant voltage supply; measuring the current flowing through the complex electric circuit, depending on whose value, in conjunction with the two measured time intervals, the parameters of the complex electric circuit are determined.

3,848,187
METHOD OF DETECTING THE ONSET OF FORMATION OF ADHERENT PRECIPITATES ON SURFACES IMMERSED IN LIQUIDS, AND OF CONTROLLING THE FORMATION OF SUCH PRECIPITATES

Gilson H. Rohrback, Whittier, and Elmond A. Holmes, Fullerton, both of Calif., assignors to Magna Corporation, Santa Fe Springs, Calif.

Filed Feb. 26, 1973, Ser. No. 335,676
Int. Cl. G01r *27/02*
U.S. Cl. 324—65 CR **41 Claims**



1. A method of detecting the deposition, onto a surface, of adherent scale or other adherent substance, which method comprises the steps of:

a. exposing an electrically conductive surface to a liquid of a type which, under at least some conditions, will deposit at least a partial coating onto a surface exposed to said liquid,

b. detecting an increase in the electrical contact resistance at said surface after it has been thus exposed,

said detection of said increase in electrical contact resistance including the step of engaging with said surface a contact element and determining the electrical contact resistance between said surface and said contact element,

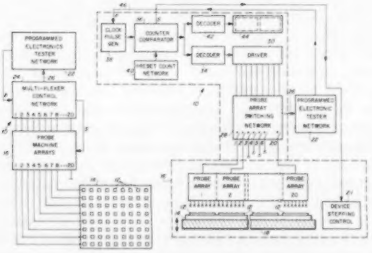
said increase in electrical contact resistance indicating that adherent substance has deposited from said liquid onto at least part of said surface, and

c. employing said detected increase in electrical contact resistance as an indication of the deposition of adherent substance from said liquid onto said surface.

3,848,188
MULTIPLEXER CONTROL SYSTEM FOR A MULTI-ARRAY TEST PROBE ASSEMBLY

Frank J. Ardezzone, Santa Clara, and Milton M. Silverstein, San Jose, both of Calif., assignors to Probe Rite, Inc., Santa Clara, Calif.

Filed Sept. 10, 1973, Ser. No. 395,978
Int. Cl. G01r *17/12*
U.S. Cl. 324—73 AT **10 Claims**



1. A multiplexer control system for controlling the interconnection of electronic test equipment with a multiple of electronic test probe arrays comprising, in combination:

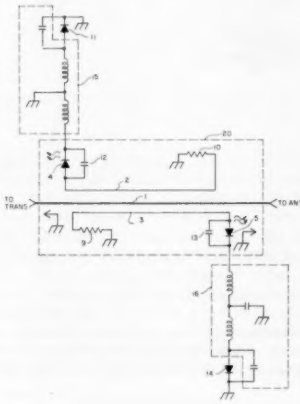
an electronic device probing station for receiving a multiple of miniature electronic devices to be tested, a probe head assembly of a plurality of individual probe arrays, each of said arrays being arranged in a common pattern compatible with the pad pattern of the devices to be tested, and a device stepping control for controlling the positioning of devices relative to said arrays;

a multiplexer control signal generator means interconnected with said device stepping control and including a stepping switch for individual interconnection of each of said individual probe arrays with a terminal means for interconnection with electronic test equipment, said multiplexer signal generator means being adapted for generating control signals to said stepper switch and to said device stepping control responsive to the number of devices aligned for simultaneous interface contact with the probe arrays, said control signals including a first command signal to the stepping control to control alignment of a set of devices relative to the probe arrays and interface contact of said aligned devices with said probe arrays and a second command signal train for successively actuating said stepping switch to provide successive interconnection of the individual arrays with said electronic test equipment.

3,848,189
QUALITATIVE RF OUTPUT-REFLECTED POWER INDICATOR

William T. Pope, Rd. 1 Maple Ln., Lee Center, N.Y. 13363

Filed Mar. 26, 1973, Ser. No. 345,193
Int. Cl. G01r *21/04, 27/02*
U.S. Cl. 324—95 **3 Claims**



1. An RF directional coupler and forward- and reflected-power indicator for radio frequency transmitters and transmission lines comprising:

a main conductor of RF current of a lineal shape having a transmitter end and an antenna end;

a first pick-up conductor parallel and proximate and thereby coupled to said main conductor by distributed inductance and capacitance;

a second pick-up conductor parallel and proximate and thereby coupled to said main conductor by distributed inductance and capacitance;

a light emitting diode electrically connected to said first pick-up conductor at the transmitter end;

a load resistor electrically connected to said first pick-up conductor at the antenna end and to a ground connection;

a light emitting diode electrically connected to said second pick-up conductor at the antenna end;

a load resistor electrically connected to said second pick-up conductor at the transmitter end and to a ground connection;

a rectifying diode electrically connected to each of said light emitting diodes and to a ground connection; and

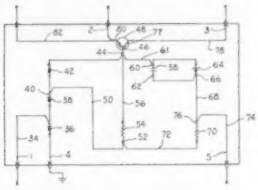
an RF bypass capacitor electrically connected across each of said light emitting diodes.

3,848,190

SIGNAL CONDITIONER TEST SET

Walter H. Houck, Titusville, and Jon D. Stigberg, Eau Gallie, both of Fla., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 30, 1973, Ser. No. 346,372
Int. Cl. G01r *31/22, 27/26*
U.S. Cl. 324—158 T **4 Claims**



1. A system for testing components contained in a signal producing module having a transistor with base, emitter and collector electrodes, first, second and third pins coupled to said electrodes respectively, a fourth pin coupled to one side of a capacitor while the other side of said capacitor is connected to said base electrode of said transistor, said system comprising:

A. a housing having a front panel,

B. first, second, third and fourth sockets adapted for receiving a correspondingly numbered pin of said module for testing said module,

C. a variable resistance load having a first terminal connected to ground,

D. switch means having a first and second operable position,

E. said switch means when in said first operable position coupling a second terminal of said variable resistance load to said emitter electrode of said transistor by means of the second socket,

F. a signal generating circuit coupled between a reference terminal connected to ground and said third socket for applying a signal to said collector electrode of said transistor, said signal generator also having means for applying a second signal between said first terminal and said reference terminal,

G. an oscilloscope having a reference terminal connected to ground and a testing terminal,

H. means for connecting said testing terminal of said oscilloscope to said second socket when said switch means is in said first operable position for producing a picture of the wave form appearing at said emitter electrode, and

I. said switch means when in said second operable position connecting said second terminal of variable resistance load to said one side of said capacitor by means of the fourth socket and to said testing terminal of said oscilloscope for testing the operability of said capacitor.

ERRATUM

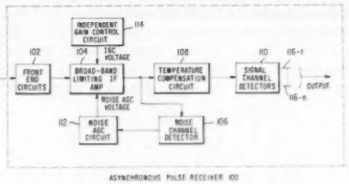
For Class 325—53 see:
Patent No. 3,848,193

3,848,191

ASYNCHRONOUS PULSE RECEIVER

Leonard Hugo Anderson, Sun Valley, Calif., assignor to RCA Corporation, New York, N.Y.

Filed July 7, 1972, Ser. No. 269,537
Int. Cl. H04b *1/16*
U.S. Cl. 325—326 **14 Claims**



1. An asynchronous pulse receiver for receiving and utilizing as a signal a stream of asynchronously-occurring pulses each consisting of a frequency burst of radiowave energy having a given relatively short duration, the distribution of amplitudes among successive pulses of said stream varying over a relatively large dynamic range; said receiver comprising:

a. first means responsive to the receipt of said received stream for forwarding said pulses thereof as an output therefrom;

b. a broad-band, amplitude-limiting, gain-controlled radiowave amplifier having said output of said first means applied as an input thereto, said radio-wave amplifier having a frequency passband sufficiently broad to substantially preserve said short duration of each of said received pulses of said stream passed therethrough, said radiowave amplifier limiting only in response to a received pulse of said stream having an amplitude in an upper portion of said dynamic range being passed therethrough, said radio-wave amplifier producing an output having an asynchronously-occurring pulse signal component and a noise component in response to said received stream of pulses being applied as a signal input thereto from said first means;

c. signal-utilization means which is responsive to said entire signal component of the output from said radio-wave amplifier;

d. noise-responsive means for deriving an AGC voltage having a magnitude in accordance with only the average intensity of noise applied as an input thereto, said AGC voltage being fed back to said radio-wave amplifier to control the gain of said radio-wave amplifier in accordance with the magnitude thereof, and

e. second means for applying the output of said radio-wave amplifier as an input to said signal-utilization means and as an input to said noise-responsive means.

3,848,192

DRIFT COMPENSATED DOCUMENT SENSING SYSTEM

Leonard J. Wallace, Vestal, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 13, 1973, Ser. No. 424,498
Int. Cl. H03k *17/00*
U.S. Cl. 328—1 **5 Claims**

1. A document sensing system comprising, in combination, a document sensor which produces an electrical sensor output signal proportional to the area of the sensor which is affected by the presence of a document,

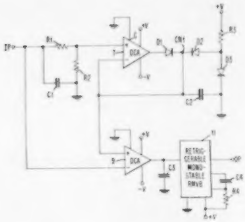
a voltage divider connected to said sensor to receive the sensor output signal therefrom and having an output terminal at which a predetermined portion of said sensor output signal appears,

positive peak follower means having an input connected to the output terminal of said voltage divider means and having an output terminal at which appears a voltage proportional to the positive peak values of the predetermined portion of said sensor output signal,

a fixed minimum threshold voltage source,

a voltage storage device,

a first circuit node connected to he output terminal of said peak follower means, to said fixed voltage source and to said voltage storage device to thereby provide at said node a composite threshold voltage,



voltage comparison means connected to said first circuit node and to said sensor output to provide a comparison output signal, when said sensor output exceeds said composite threshold voltage; and

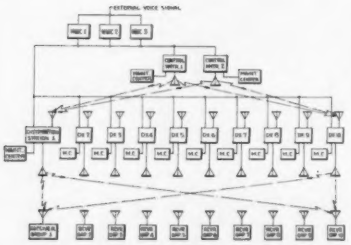
delay means having an input terminal connected to output of said comparison means and having an output terminal which provides an output signal which is terminated at a predetermined time following the termination of an input signal.

3,848,193

NATIONWIDE SYSTEM FOR SELECTIVELY DISTRIBUTING INFORMATION

Robert B. Martin, Arlington, Va., and Carl T. Jones, Temple Hills, Md., assignors to Gautney & Jones Communications, Inc., Falls Church, Va.

Filed Dec. 15, 1972, Ser. No. 315,649
Int. Cl. H04h *1/00, 1/08*
U.S. Cl. 325—53 **19 Claims**



1. A national warning system comprising:

a plurality of geographically spaced warning centers, each including means for controlling the operation of said system;

control means for at all times restricting system control to no more than one of said warning centers at a time;

a plurality of distribution stations located in respective geographic regions;

radio transmitter means located at each distribution station and cable of broadcasting a signal throughout the geographic region in which said each distribution station is located,

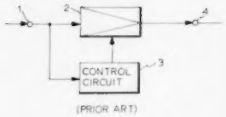
command means located at each warning center, and means for actuating said command means only when that warning center is in control of the system, for said command means transmitting command signals initiating broadcast of a signal from selected ones of said radio transmitter means, said radio transmitter means being ultimately controlled by said command means at each warning center in control of said system.

3,848,194

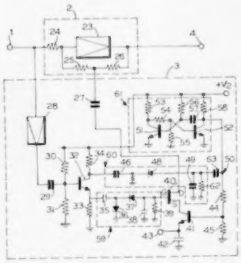
AUTOMATIC GAIN CONTROL CIRCUIT

Katsutoshi Nishimura, and Kiyoji Fujisawa, both of Osaka, Japan, assignor to Matsushita Electric Co., Limited, Osaka, Japan

Filed July 16, 1973, Ser. No. 379,334
Int. Cl. H03g *3/30*
U.S. Cl. 330—29 **3 Claims**



(PRIOR ART)



1. An automatic gain control circuit comprising an input terminal to which an input signal is applied, an output terminal, a variable gain control means connected between said input terminal and said output terminal and having a control terminal, and a variable impedance means which is coupled to said variable gain control means and controls the gain thereof according to a d.c. control signal applied to said control terminal thereof, said variable impedance means being comprised of an amplifier means coupled to said input terminal and which provides first and second output signals, a first smoothing circuit, a first rectifier means connected between said amplifier means and said first smoothing circuit for receiving said first output signal from said amplifier means and producing a control signal through said first smoothing circuit, a second smoothing circuit, and a second rectifier means connected between said amplifier means and said second smoothing circuit for receiving said second output signal from said amplifier means and producing a control signal through said second smoothing circuit wherein said variable gain control means is an operational amplifier having an input resistor and two feedback resistors connected in series, a feedback capacitor, the junction point of said feedback resistors being coupled to said variable impedance means through said feedback capacitor, said variable impedance means including a field effect transistor, the drain of which is coupled to said junction point and the gate of which is coupled to the output of said first rectifier means, a switching transistor having a collector

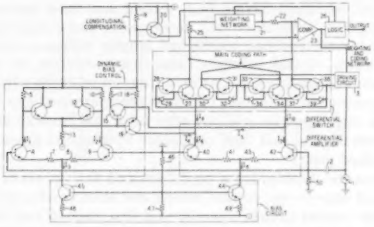
connected to the source of said field effect transistor, said switching transistor acting as a switch inserted between the source of said field effect transistor and ground, said switching transistor having the base coupled to said second rectifier for being controlled thereby, said amplifier means including a transistor, the emitter of which is connected to said first rectifier means and the collector of which is connected to said second rectifier means, and said second rectifier means further including a switching time control circuit triggered by said second rectifier means and which controls said switching transistor.

3,848,195

DIFFERENTIAL AMPLIFIER WITH DYNAMIC BIASING

Frederick John Kiko, Sheffield Village, Ohio, assignor to Bell Telephone Laboratories, Incorporated, Murray Hill, Berkeley Heights, N.J.

Filed Mar. 12, 1973, Ser. No. 340,587
Int. Cl. H03f *3/68*
U.S. Cl. 330—30 D **12 Claims**



1. A dynamically biased amplifier comprising first and second transistors, d.c. biasing means connected with the base and emitter electrodes of each of said first and second transistors for operation as a differential amplifier, the base electrode of at least one of said first and second transistors being additionally connected to an input signal to be differentially amplified, a source of bias potential, means for connecting the collector-emitter paths of said first and second transistors in parallel and for connecting the parallel combination to said source of bias potential thereby providing currents to the collector-emitter paths of said first and second transistors, dynamic biasing means connected to said source of bias potential and to the collector-emitter paths of each of said first and second transistors to provide additional currents to the collector-emitter paths of said first and second transistors, and means connecting said dynamic biasing means to said input signal to control the magnitude of the additional current supplied to the collector-emitter paths of said first and second transistors in accordance with the magnitude of the input signal.

3,848,196

BROADBAND TRAPATT DIODE AMPLIFIER

Hirohisa Kawamoto, Kendall Park, N.J.; Elmer Lawrence Allen, Jr., Philadelphia, Pa., and Sherman Weisbrod, Trenton, N.J., assignors to RCA Corporation, New York, N.Y.

Filed Nov. 8, 1973, Ser. No. 413,825
Int. Cl. H03b *7/14*
U.S. Cl. 330—34 **13 Claims**

1. A microwave trapatt diode amplifier operative over a desired band of microwave frequency, comprising:

a. transmission line circuit means having a plurality of electrically connected transmission line sections of predetermined RF electrical length along which microwaves propagate including:

1. a common line section having a first and a second end,

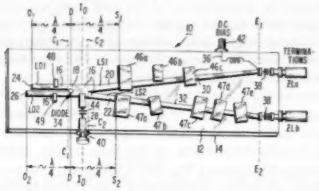
2. three or more furcate line sections electrically connected across and extending from the ends of the common line section, at least one of said furcate line sections extending from each end thereof,

3. RF shorting means for shorting the furcate line sections extending from the first end of said common line section;

b. a trapatt diode electrically shunt connected across said common line section at an intermediate point along its sectional length,

c. input and output coupling means electrically shunt connected across said common line section at an intermediate point along its sectional length for respectively introducing a microwave input signal and extracting an amplified output signal thereof,

d. resistance load connection means for each of said RF shorted furcate line sections,



e. means for introducing a bias signal across said trapatt diode,

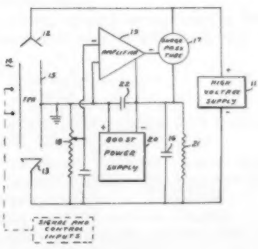
f. said shorted and non-shorted sections forming constituent length pair combinations of substantially quarter-wavelength RF electrical lengths which extend from the intermediate point of connection of said trapatt diode to the RF electrical ends of various ones of said furcate line sections and along which said microwaves are confined to propagate, wherein various ones of said constituent length pair combinations cooperate to provide slightly differing predetermined delays to propagating microwaves to provide a plurality of constituent amplification frequency peaks whereby broadbanding frequency amplification may be achieved.

3,848,197

BOOST-SURGE POWER SUPPLY

Bruce Boyd, Ellicott City; Peter G. Espersen, Glen Burnie, and Lewis S. Heyser, Sr., Linthicum, all of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Apr. 9, 1973, Ser. No. 349,903
Int. Cl. H03f *3/54*
U.S. Cl. 330—44 **1 Claim**



1. A boost surge power supply system for a high power transmitting final power amplifier tube the said tube having a

collector electrode connection, a body electrode connection, a cathode electrode connection, a nominal operating voltage potential between the said anode connection and said cathode connection, and a nominal operating voltage potential between the said cathode connection and the said body connection, the said boost surge power supply comprising:

a. a floating direct current high voltage source having a relative positive potential connected to the said collector connection of the final power amplifier tube and a relative negative potential connected to the said cathode connection of the final power amplifier tube; the said high voltage being the said nominal operating voltage potential between these electrodes;

b. a body capacitor having a determined capacitance and a resistance connected in parallel with the said body capacitor providing RC time constant;

c. a boost power supply including a storage capacitor, the said storage capacitor having a capacitance at least ten times the capacitance of the said body capacitor, and the said boost power supply and said storage capacitor providing a larger RC recharge time constant than the said determined RC time constant of the said body capacitor and parallel connected resistance;

d. means for connecting the said body capacitor and the said storage capacitor in series relationship between the said cathode electrode connection and the said body electrode connection of the final power amplifier tube;

e. means for sensing the voltage potential between the said body electrode connection and the said cathode electrode connection of the final power amplifier tube and providing a control signal;

f. a surge pass tube having at least a cathode, a grid, and a plate electrode and a hold-off voltage capability at least one-third the magnitude of the said nominal operating voltage potential between the said cathode connection and the said body connection;

g. means for connecting the said plate electrode of the said surge pass tube to the positive potential of the said high voltage source;

h. means including an amplifier for connecting the said control signal to the grid of the said surge pass tube; and

i. means for connecting the said cathode of the surge pass tube and the said body capacitor to provide a series relationship of the said surge pass tube and the said body capacitor across the said high voltage source.

3,848,198

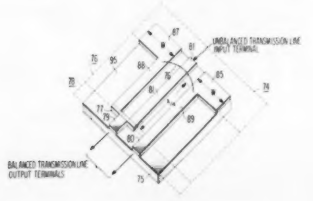
MICROWAVE TRANSMISSION LINE AND DEVICES USING MULTIPLE COPLANAR CONDUCTORS

Robert Eugene De Brecht, Cranbury, and Louis Sebastian Napoli, Hamilton Square, both of N.J., assignors to RCA Corporation, New York, N.Y.

Division of Ser. No. 315,087, Dec. 14, 1972, Pat. No. 3,798,575. This application Sept. 27, 1973, Ser. No. 401,553

Int. Cl. H03f *3/60*

U.S. Cl. 330—56 **3 Claims**



1. Apparatus for amplifying electromagnetic energy over a predetermined band of frequencies comprising:

a dielectric substrate having a predetermined dielectric constant;

an input circuit having first, second and third coplanar strip-like conductors each having input and output ends and predetermined widths and lengths adjacent to one surface of said dielectric substrate, said first conductor having one edge separated from an adjacent edge of said second conductor by a first predetermined gap and an edge opposite said one edge separated from an adjacent edge of said third conductor by a second predetermined gap;

means for establishing a predetermined D.C. potential at said input ends respectively of said second and third conductors of said input circuit, whereby said first, second and third conductor input ends, said dielectric constant and said first and second predetermined gaps form an unbalanced transmission line input terminal:

means for connecting said output ends of said second and first conductors of said input circuit, whereby said first and second conductor output connected ends, said third conductor output end, said dielectric constant and said first and second predetermined gaps form a balanced transmission line input terminal;

an output circuit having first, second and third coplanar strip-like conductors each having input and output ends and predetermined widths and lengths adjacent to one surface of said substrate, said first conductor of said output circuit being separated from an adjacent edge of said second conductor by a first predetermined gap and an edge opposite said one edge separated from an adjacent edge of said third conductor by a second predetermined gap;

means for establishing a predetermined D.C. potential at said output ends of said second and third conductors of said output circuit, whereby said first, second and third conductor output ends of said output circuit, said dielectric constant, and said first and second predetermined gaps of said output circuit form an unbalanced transmission line input terminal;

means for connecting said input ends of said second and first conductors of said output circuit, whereby said first and second conductor input connected ends of said output circuit, said third conductor input end, said dielectric constant and said first and second predetermined gaps of said output circuits form a balanced transmission line input terminal;

a first electromagnetic energy amplifying device having a first electrode coupled to said third conductor output end of said input circuit, a second electrode coupled to said third conductor input end of said output circuit and a third electrode at said predetermined D.C. potential;

a second electromagnetic energy amplifying device having a first electrode coupled to said first and second conductor output connected ends of said input circuit, a second electrode coupled to said first and second conductor input connected ends of said output circuit and a third electrode at said d.c. potential.

3,848,199

FREQUENCY GENERATING DEVICE UTILIZING A PHASE LOCKED LOOP INCLUDING A VOLTAGE CONTROL OSCILLATOR

Charles L. Weber, Chanute, Kans., assignor to Kustom Electronics, Inc., Chanute, Kans.

Continuation of Ser. No. 213,948, Dec. 30, 1971, abandoned. This application Nov. 16, 1973, Ser. No. 416,412

Int. Cl. H03b *3/04*

U.S. Cl. 331—2 **6 Claims**

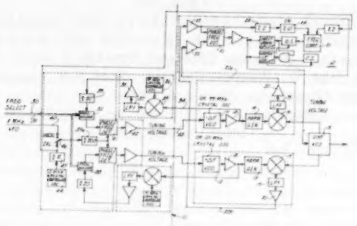
1. A signal generating device for generating a plurality of test signals for avionics equipment, the device comprising:

a voltage controlled oscillator (VCO) having a frequency control input and an output corresponding to said test signals, and phase locked loop means interconnected with said VCO control input for setting said VCO output

frequency to a value equal to a predetermined integral multiple of the average value of at least two loop input reference frequencies, the phase locked loop comprising:

a first harmonic signal mixer means for generating a first loop input reference frequency and for utilizing same to produce a first plurality of difference frequencies by producing a plurality of harmonics of said first loop input reference frequency and mixing said harmonics with said VCO frequency,

a second harmonic signal mixer means for generating a second loop input reference frequency having a frequency greater than said first loop input reference frequency and for utilizing said second loop input reference frequency to produce a second plurality of difference frequencies by producing a plurality of harmonics of said second loop input reference frequency and mixing said last mentioned harmonics with said VCO frequency,



first low pass filter means interconnected with said first harmonic signal mixer means for filtering said first plurality of difference frequencies, said filter means having an output,

second low pass filter means interconnected with said second harmonic signal mixer means for filtering said second plurality of difference frequencies, said second filter means having an output, and

phase comparator means for comparing said first filter means output with said second filter means output, said phase comparator means interconnected to said VCO frequency control input and operable to lock said VCO to a predetermined frequency such that the frequency of said first filter means output is the same as the frequency of said second filter means output.

3,848,200

ASSEMBLY COMPRISING A QUARTZ OSCILLATOR DELIVERING TWO-PHASE PERIODIC SIGNALS AND A DIVIDER FOR THE FREQUENCY OF SAID SIGNALS

Jakob Luscher, 20b Route de Drize, Carouge/Geneve, Switzerland

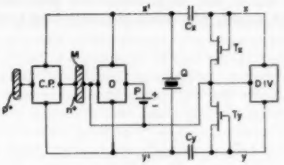
Filed July 20, 1973, Ser. No. 380,970

Claims priority, application Switzerland, July 21, 1972, 10985/72

Int. Cl. H03b *5/36*

U.S. Cl. 331—51 **2 Claims**

1. Assembly comprising a quartz oscillator delivering two-phased periodic signals and a divider for the frequency of said signals, characterized by the fact that the divider is formed of a shift register which is in integrated form and comprises a plurality of links connected one behind the other, the first of which is arranged behind the last so as to form a closed loop, these links being controlled by the said oscillator alternately from both ends thereof, by the fact that the oscillator and the register are coupled to each other in such a manner that the capacitor change associated with the input capacitance of the register constitutes a part of the capacitive charge of the said oscillator, and finally by the fact that it comprises, arranged at least at one point of said closed loop, means to form a characteristic signal of the passage at said point of any electric charge whose value is at least equal to a predetermined lower



value, means for increasing the value of such a charge up to a ceiling value, and means for removing from said endless loop any charge whose value does not reach said predetermined lower value, the said assembly comprising furthermore means for biasing the crystal in which the components of the said register are integrated.

3,848,201

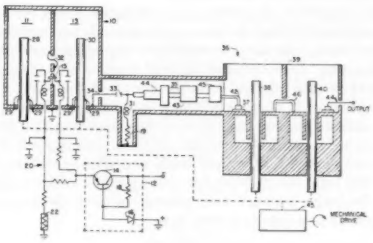
TURNABLE SOLID STATE LOCAL OSCILLATOR

Adolph Presser, Kendall Park, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 18, 1971, Ser. No. 189,822

Int. Cl. H03b *3/04*

U.S. Cl. 331—76 **4 Claims**



1. In a wide band tunable power supply the combination comprising:

a. a transistor oscillator,

b. a two section constant Q, wide band coaxial filter tunable over the n-th harmonic frequency range of said oscillator,

c. a step recovery diode connected in series in the input loop of said coaxial filter,

d. impedance matching network means coupling the output of said transistor oscillator to said input loop of said coaxial filter.

3,848,202

TRANSVERSE EXCITATION SYSTEM FOR GAS LASER USING THREE ELECTRODES

Graham Everett Hyne, Ste. Foy, Quebec, Canada, assignor to The Minister of National Defence of Her Majesty's Canadian Government, Ottawa, Canada

Filed May 23, 1972, Ser. No. 256,044

Claims priority, application Canada, Sept. 13, 1971, 122687

Int. Cl. H01s *3/22*

U.S. Cl. 331—94.5 PE **14 Claims**

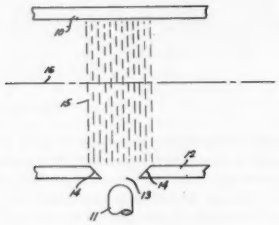
1. In a gas laser having a population inversion region for containing an active laser gas and having a longitudinal axis

and means including a three electrode structure for the transverse excitation of the laser gas in said region for creating said population inversion, the improvement wherein

said electrode structure comprises:

an anode extending parallel to said longitudinal axis in said region,

at least one uninsulated metal cathode pin positioned on the opposite side of said longitudinal axis from said anode and longitudinally extending in a direction toward said anode,



a plasma forming electrode positioned fully between said anode and cathode pin and having an opening formed substantially in alignment with the longitudinally projecting cathode pin,

said plasma forming electrode being positioned on the same side of said longitudinal axis as said cathode pin,

the spacing between the cathode pin and the edges of the opening in said plasma forming electrode being much less than the distance between the plasma forming electrode and the anode, and wherein

said population inversion means includes means for applying a high voltage pulse across said anode and cathode pin to cause a discharge between the cathode pin and plasma forming electrode and current limiting impedance between said plasma forming electrode and said anode operative in conjunction with said spacing between said cathode pin and the edges of the opening in said plasma forming electrode and the potential difference between said plasma forming electrode and anode resulting from said high voltage pulse for causing solely a diffuse plasma discharge between said plasma forming electrode and anode to excite said laser gas.

3,848,203

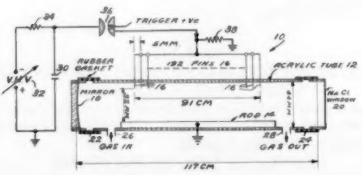
TEA LASER

Martin M. Hale, 20 Pere Jogues, Loretteville, and Kenneth A. Laurie, 1035 Blvd. Pie XII, Apt. 108, Ste. Foy, Quebec, both of Canada

Filed Nov. 3, 1972, Ser. No. 303,344

Int. Cl. H01s 3/09

U.S. Cl. 331—94.5 **11 Claims**



1. A pulsed TEA laser comprising:

an elongated cavity having a longitudinal optical axis,

first and second spaced electrode means positioned on opposite sides of said optical axis, means for introducing gas into said cavity between said electrode means,

said first electrode means including a multiplicity of spaced pin electrodes each of which are positioned to cooperate with said second electrode means,

storage condenser means,

means for charging said condenser means to a voltage of about 40 kilovolts,

means connecting said condenser means across said electrode means including switch means directly connecting said condenser means to each of said pin electrodes for applying said condenser voltage across said first and second electrode means for up to only one half microsecond to cause uniform shower discharges from each of said pin electrodes to said second electrode means, said gas being a mixture including carbon dioxide and helium with helium being at least 62 percent and less than 80 percent of the mixture by volume.

3,848,204

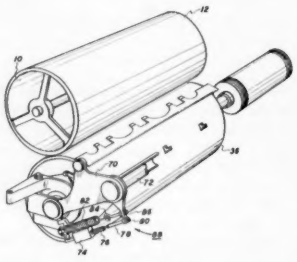
PRESSURE ADJUSTABLE ELECTROPHOTOGRAPHIC PRINTING MACHINE TRANSFER APPARATUS

Vaidevutis C. Draugelis, Rochester; Franklin S. Reese, Victor, and John W. Wagner, Penfield, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Sept. 21, 1973, Ser. No. 399,578

Int. Cl. G03g 15/16

U.S. Cl. 355—3 R **6 Claims**



1. An apparatus for transferring a developed image of electrostatically charged particles from an image bearing member to a sheet of support material, including:

a frame;

a yoke mounted pivotably on said frame;

a transfer drum mounted rotatably in said yoke and arranged to have the sheet of support material secured releasably thereon for movement in a recirculating path therewith;

resilient means for applying a moment to said yoke arranged to balance the moment applied thereon by said transfer drum;

means for generating a substantially constant potential difference between said transfer drum and the image bearing member;

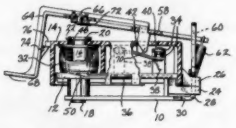
solenoid means operatively associated with said yoke and arranged to move said transfer drum from an inoperative position spaced from the image bearing member to an operative position in contact therewith, whereby the potential difference between said transfer drum and the image bearing member attracts the developed image of charged particles from the image bearing member to the sheet of support material secured to said transfer drum; and

means for controlling the force applied at contact between said transfer drum and the image bearing member to effect efficient transfer of the developed image of electrostatically charged particles.

3,848,205
KICK-OUT SWITCH AND BUZZER

Spencer C. Schantz, 16608 W. Rogers Dr., New Berlin, Wis., and William R. Berry, Menomonee Falls, Wis., assignors to said Schantz, by said Berry

Continuation-in-part of Ser. No. 306,527, Nov. 15, 1972. This application Oct. 1, 1973, Ser. No. 402,518
Int. Cl. H01h *50/02*
U.S. Cl. 335—128 **13 Claims**

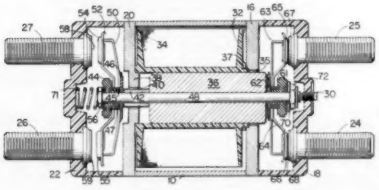


1. In an electric switch having a magnetic frame, having a magnetic pole piece mounted on said frame, having an electric coil for said pole piece, having a first electric terminal coupled to one end of said coil, having a second electric terminal coupled to the other end of said coil, having first and second contact-supporting arms attached respectively to said first and second terminals, having first and second electric contacts mounted on said contact-supporting arms, one of said contact-supporting arms being flexible for relative movement toward and away from the other to open and close the contacts, and having actuating means engageable with said flexible contact-supporting arm for moving it to open and close the contacts, the improvement comprising a base member attached to said frame and forming a common support for said coil, terminals, contact-supporting arms and contacts, said base member being made of an electric insulating material and having an upstanding bobbin projecting therefrom provided with an axial bore through which said pole piece extends, and said coil being wound around said bobbin, and said base member having two pockets each receiving a portion of an electric terminal to support the terminal and the electric contact attached thereto.

3,848,206
ELECTROMAGNETIC SOLENOID WITH IMPROVED CONTACT ANTIBOUNCE MEANS

Robert E. Prouty, and James J. Smith, both of Logansport, Ind., assignors to Essex International, Inc., Fort Wayne, Ind.

Filed July 18, 1973, Ser. No. 380,502
Int. Cl. H01h *3/60*
U.S. Cl. 335—193 **2 Claims**



1. In an electromagnetic switch having a housing, an electromagnetic actuator including a coil with a central bore, a plunger armature reciprocable within said coil bore between actuated and unactuated positions in response to energization and deenergization of said coil, a pair of spaced fixed contacts in said housing, contact carrier means rigidly connected to and movable conjointly with said plunger armature, flexible bridging contact means slidably carried by said contact carrier means for limited relative movement thereon and arranged to engage said fixed contacts when said plunger armature is at the unactuated position, a spring member carried by said contact carrier means and biasing said bridging contact means toward said fixed contacts, and spring means biasing said plunger armature and contact carrier means to said unactuated position, wherein the improvement comprises in combination therewith:

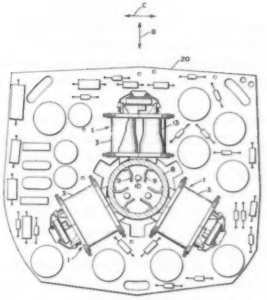
an adjustable stop member on said housing disposed adjacent one end of said plunger armature to effectively limit the extent of movement of said plunger armature in the direction toward said unactuated position; and

said stop member being adjusted to allow movement of said plunger armature and said contact carrier means from said actuated position to said unactuated position until said fixed contacts are engaged by said flexible bridging contact means and thereafter an additional predetermined distance which limits the sliding and flexing movement of said flexible bridging contact means to a value that results in minimum bounce of the flexible contact means upon deenergization of said coil.

3,848,207
MOUNTING ASSEMBLY FOR A CONVERGENCE COIL

Robert William Bussey, Crystal Lake, and John Glenn Powers, Wilmette, both of Ill., assignors to TRW, Inc., Elk Grove Village, Ill.

Filed Feb. 1, 1974, Ser. No. 438,757
Int. Cl. H01f *7/00*
U.S. Cl. 335—210 **14 Claims**



1. A convergence assembly for use with a cathode ray tube and for mounting on a printed circuit board comprising;

a supporting structure having a lower portion for mounting proximate to a cathode ray tube neck and an upper portion for mounting radially distant from a cathode ray tube neck,

magnetic flux producing means contained by the supporting structure,

mounting means including a lower mounting lug pair extending from the lower portion of the supporting means which is resilient in the radial and skew directions and substantially rigid in the axial direction of a cathode ray tube neck and having a mounting portion for inserting into a printed circuit board, and

an upper mounting lug pair extending from the upper portion of the supporting means which is resilient in the radial direction of a cathode ray tube neck and having a mounting portion for inserting into a printed circuit board,

whereby upon assembly to a cathode ray tube neck the convergence assembly being mounted on a printed circuit board will be slightly movable with respect to the printed

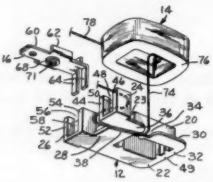
circuit board in the radial direction and slightly movable in the skew direction only at its portion near to the cathode ray tube and will be immovable in the axial direction.

3,848,208

ENCAPSULATED COIL ASSEMBLY

Carlyle Steven Dawson, Normal, and Dorsey Lorraine Hardman, Lexington, both of Ill., assignors to General Electric Company, New York, N.Y.

Filed Oct. 19, 1973, Ser. No. 407,791
Int. Cl. H01f 27/30
U.S. Cl. 336—96 **4 Claims**



1. An encapsulated coil assembly comprising:

a. an electrically insulative support including a main portion, a flanged portion extending from said main portion, and first and second terminal receiving sections, said flanged portion comprising top, bottom and first and second side sections having a first surface contiguous with said main portion and a second surface opposite said first surface, said first side section having an opening extending between said first and second surfaces and a slot within said second surface, the slot extending from said bottom section at a point adjacent said first terminal receiving section to the opening in said first side section at a point adjacent said main portion, each of said first and second terminal receiving sections extending from said bottom section and having a channel extending completely therethrough in a direction from the top section to the bottom section of said flanged portion;

b. first and second terminal members positioned within said first and second terminal receiving sections respectively;

c. a coil winding surrounding said main portion, said winding including a first turn, a last turn, a start wire portion and a terminating wire portion, said start wire portion extending from said first terminal, through the channel in said first terminal receiving section to within the slot in the second surface of said flanged portion, then through the opening in said flanged portion to said main portion and the beginning of said first turn of said coil winding, said terminating wire portion extending from the end of said last turn of coil winding to said second terminal member; and

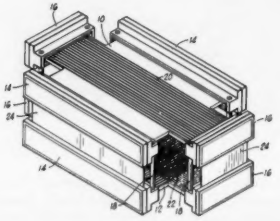
d. encapsulating material surrounding said coil and said support, whereby during the encapsulation of said coil assembly, and while said encapsulating material is flowing in the direction from said top section toward said bottom section of said flanged portion and through the channel in said first terminal receiving section, sufficient pressure is applied to said start wire to insure firm placement of said start wire within the slot in the second surface of said flanged portion after completion of the encapsulation of said coil assembly.

3,848,209

MAGNETIC FIELD COIL ASSEMBLY FOR A MAGNETIC BUBBLE DOMAIN DEVICE

Fred S. Lee, and Jonas K. Vysniauskas, both of Oklahoma City, Okla., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed Jan. 2, 1974, Ser. No. 430,366
Int. Cl. H01f 27/30
U.S. Cl. 336—188 **4 Claims**



1. An orthogonal coil assembly for establishing a propogation field for magnetic bubble domains comprising:

a. first and second generally rectangular planar boards, each having orthogonal sets of parallel conductors extending across the major surfaces;

b. four generally rectangular interconnecting sheets, each having a set of parallel conductors extending across its surface, the conductors on said interconnecting sheets being spaced at the same intervals as the conductors on said planar boards; and

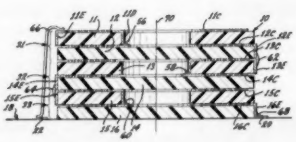
c. a plurality of removable connectors for securing the conductors at the edges of said planar boards in registration with the conductors at the edges of said interconnecting sheets to form orthogonal sets of electrically conducting coils.

3,848,210

MINIATURE INDUCTOR

Darrel Feikner, Playa Del Rey, Calif., assignor to Vangaurd Electronics Company, Inc., Inglewood, Calif.

Filed Dec. 11, 1972, Ser. No. 313,647
Int. Cl. H01f 27/30
U.S. Cl. 336—200 **3 Claims**



1. An inductor comprising:

a plurality of plates of ferromagnetic material arranged in a stack, alternate plates of said stack having central holes extending completely therethrough; and

a plurality of coils disposed on said plates, each coil forming a spiral extending in substantially a plane on a face of a plate, and the coils on pairs of adjacent plates being wound in opposite directions of spiralling, the coils on the plates that have central holes extending over the edges of the holes and along the walls of the holes and the coil portions lying on the hole walls being integral with the coil portions that extend in a spiral on the face of the plate;

a plurality of first connector means, each including a quan-

tity of conductive material joined to a coil portion that lies on the wall of a plate hole and joined to the center portion of a coil on an adjacent plate; and

a plurality of second connector means, each interconnecting the outer portions of the coils which lie on two plates whose coil center portions are unconnected to each other.

3,848,211

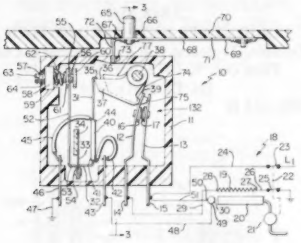
ELECTRICAL SWITCH CONSTRUCTION AND AN ELECTRICAL CONTROL SYSTEM UTILIZING THE SAME OR THE LIKE

William J. Russell, Milford, Conn., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Dec. 14, 1973, Ser. No. 421,525

Int. Cl. H01h *71/16*

U.S. Cl. 337—64 **20 Claims**



1. An electrical switch construction comprising a housing means, a pair of movable spring blades carried by said housing means and respectively having contact means normally placed out of contact with each other by the normal bias of said switch blades, a pair of cams rotatably carried by said housing means and being respectively engageable with said switch blades, one of said cams when in one position relative to said housing means being adapted to hold its respective switch blade into electrical contact with the other switch blade to complete an electrical circuit therebetween, the other of said cams when in one position thereof relative to said housing means being adapted to hold its respective switch blade out of contact with the other switch blade even though said one cam is in its said one position thereof to thereby prevent completion of said electrical circuit, a movable actuator carried by said housing means and being adapted to simultaneously engage said cams and move the same to said respective one positions thereof, and latch means for holding said one cam in said one position thereof.

3,848,212

SNAP-ACTION SWITCH ASSEMBLY

Hans Schwarm, Katzwang, Nurnberg, Germany, assignor to Eberle Werke KG, Nurnberg, Germany

Filed Nov. 16, 1973, Ser. No. 416,474

Claims priority, application Germany, Dec. 14, 1972, 2261039

Int. Cl. H01h *13/36*

U.S. Cl. 337—67 **8 Claims**

1. A snap-action switch assembly comprising, in combination:

a first support member;

an elongate arm projecting from said first support member and having a first end portion thereof supported by said first support member;

a second support member;

an elongate spring member interconnecting said second support member and said arm to exert a compressive force on said arm;

spring adjuster means supported on a substantially central portion of said elongate spring member and being selectably presettable to vary the magnitude of said compressive force; and

electrical contact means mounted next adjacent a portion of said arm spaced from said first end portion and actuatable by angular displacement of the end portion of said arm opposite said first end portion.

3,848,213

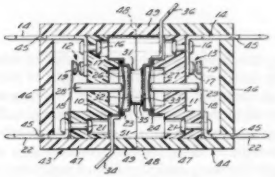
TIME DELAY RELAY

Donald J. Schmitt, Mansfield, Ohio, assignor to Therm-O-Disc Incorporated, Mansfield, Ohio

Filed Oct. 15, 1973, Ser. No. 406,539

Int. Cl. H01h *71/22*

U.S. Cl. 337—107 **13 Claims**



1. A relay comprising

A. an electric heater,

B. a first assembly positioned on one side of said heater,

C. a second assembly positioned on the opposite side of said heater,

D. each assembly including,

a. a disc retainer,

b. a bimetal snap disc supported by said retainer,

c. and a switch operated by said snap disc,

E. each retainer being formed of a material having good electrical conducting properties and good heat conducting properties,

F. said retainers engaging opposite sides of said heater and providing the electric connection for energizing said heater,

G. said retainers also providing the principal heat flow path between said heater and the associated disc.

3,848,214

METHOD OF ASSEMBLING ELECTRIC HIGH-VOLTAGE FUSES AND SUBASSEMBLY THEREFOR

Erwin Saizer, Waban, Mass., assignor to The Chase-Shawmut Company, Newburyport, Mass.

Filed July 9, 1971, Ser. No. 161,089

Int. Cl. H01h *85/04*

U.S. Cl. 337—158 **15 Claims**

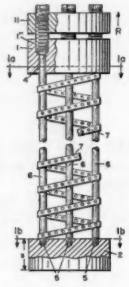
1. A method of assembling electric high-voltage fuses including the steps of

a. providing each of a pair of cylindrical terminal plugs with axially extending bores circular in cross-section arranged to establish a pattern in the shape of a polygon in each of said pair of terminal plugs;

b. threading a plurality of rods through said plurality of bores in one of said pair of terminal plugs, establishing

firm engagement of the ends of said plurality of rods remote from said one of said pair of terminal plugs inside said plurality of bores in the other of said pair of terminal plugs and maintaining a fixed spacing between said pair of terminal plugs by means of said plurality of rods;

c. winding a fusible element substantially helically around the portion of said plurality of rods situated between the axially inner end surfaces of said pair of terminal plugs and conductively connecting each end of said fusible element to one of said pair of terminal plugs;



d. inserting the squirrel-cage-like structure formed by said pair of terminal plugs and said plurality of rods with said fusible element thereon into a tubular casing and affixing said pair of terminal plugs to said casing; and thereafter

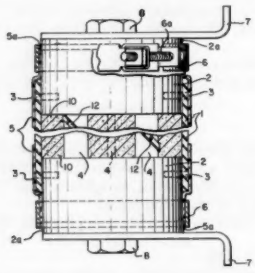
e. filling said casing with a pulverulent arc-quenching filler through a filling aperture in said pair of terminal plugs and removing said plurality of rods from said fusible element and from the space inside said casing through said plurality of bores in said one of said pair of terminal plugs.

3,848,215

FLUID-TIGHT ELECTRIC FUSE

Frederick J. Kozacka, South Hampton, N.H., and Irwin Salzer, Waban, Mass., assignors to The Chase-Shawmut Company, Newburyport, Mass.

Filed Nov. 9, 1973, Ser. No. 414,307
Int. Cl. H01h *85/14*
U.S. Cl. 337—246 **5 Claims**



1. An electric fuse including a cylindrical casing of electric insulating material, a pulverulent arc-quenching filler inside of and in engagement with said casing, metallic plug terminals having an outer diameter equal to the inner diameter of said casing plugging the ends of said casing, fusible element means inside said casing immersed in said pulverulent arcquenching filler conductively interconnecting said pair of plug terminals and a fluid-tight single piece sleeve of heat-shrinkable and heat-shrunk substance mounted under stress upon said casing wherein the improvement comprises

a. cylindrical coaxial extensions on and integral with said plug terminals projecting axially beyond said casing to the outside of said casing, said extensions having an outer diameter substantially equal to the inner diameter of said casing so that the extent of shrinkage required to mount said sleeve tightly on said casing and to mount said sleeve tightly on said extensions is substantially equal; and

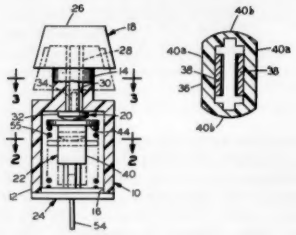
b. annular metal clamps having adjustment screws for varying the extent of the periphery thereof mounted on said extensions and on portions of said sleeve extending beyond said casing and overlapping said extensions, said annular metal clamps clamping said portions of said sleeve against said extensions.

3,848,216

SOLID STATE KEYBOARD SWITCH

John G. Gamble, 24 Forest Hill Dr., Simsbury, Conn. 06070

Filed Oct. 9, 1973, Ser. No. 404,485
Int. Cl. H01c *7/16*
U.S. Cl. 338—32 H **10 Claims**



1. A solid state switch operable for accomplishing an electrical switching function comprising:

a. housing means having a plurality of side walls interconnected to form a hollow chamber therebetween;

b. externally accessible terminal means supported on said housing means operable for connecting the solid state switch in electrical circuit relation in an electrical circuit;

c. guide means mounted on said housing means and extending inwardly into said hollow chamber;

d. a field sensitive switching element mounted on said guide means operable in response to exposure to changes in magnetic flux density to produce corresponding electrical outputs;

e. magnetic actuator means supported in said hollow chamber of said housing means and having an opeing formed at least partially therethrough for receiving at least a portion of said guide means therewithin, said magnetic actuator means including magnetic means positioned thereon with at least a portion of said magnetic means located on either side of said opening in said magnetic actuator means, said magnetic means comprising at least two cross coupled magnetic pole pairs operable to produce a standing magnetic wave; and

f. force applying means operatively connected to said magnetic actuator means and actuatable for producing relative movement between said magnetic actuator means and said guide means wherein when said guide means in response to actuation of said force applying means occupies a first position relative to said opening in said magnetic actuator means said magnetic means bears a first relationship to said field sensitive switching element thereby exposing said field sensitive switching element to

a first level of magnetic flux density to establish a first operating condition of said field sensitive switching element thereby causing a first form of output to be provided from the solid state switch, and when said guide means in response to the unactuation of said force applying means occupies a second position relative to said opening in said magnetic actuator means said magnetic means bears a second relationship to said field sensitive switching element thereby exposing said field sensitive switching element to a second level of magnetic flux density to establish a second operating condition of said field sensitive switching element thereby causing a second form of output to be provided from the solid state switch.

3,848,217

MAGNETORESISTIVE DEVICES AND TRANSDUCERS

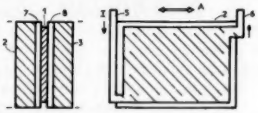
Jean-Pierre Lazzari, Villiers Saint Frederic, France, assignor to Compagnie Internationale Pour L'Informatique, Versailles, France

Filed Dec. 15, 1972, Ser. No. 315,476

Claims priority, application France, Dec. 22, 1971, 71.46103

Int. Cl. H01c *7/16*

U.S. Cl. 338—32 R **5 Claims**



1. A magnetoresistive device comprising:

a layer of magnetoresistive anisotropic material, having an easy axis of magnetization at substantially 45° to the direction of electrical current flow therethrough;

a pair of layers of high permeability magnetic material, thicker than and sandwiched around said magnetoresistive layer; and

electrically insulating films one positioned between each magnetoresistive and magnetic layers respectively to effect magnetostatic coupling between said magnetoresistive and magnetic layers.

3,848,218

HUMIDITY SENSING ELEMENT

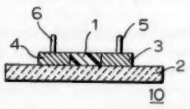
Takashi Wakabayashi, C-301, 8, Misawa-cho, Ibaragi, and Kanji Sugihara, 17-1 8-chome, Korigaoka, Hirakata, both of Japan

Filed Sept. 7, 1973, Ser. No. 394,999

Claims priority, application Japan, Sept. 20, 1972, 47-94738

Int. Cl. H01c *13/00*

U.S. Cl. 338—35 **9 Claims**



1. A humidity sensing element comprising a humidity sensitive film which has finely divided conductive particles dispersed in a resin consisting essentially of a reaction product of a chlorine containing polymer and a polyamide resin, and two electrodes applied to said humidity sensitive film.

3,848,219

VARIABLE RESISTOR

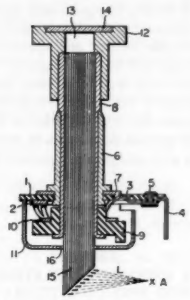
Shunzo Oka, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Dec. 26, 1972, Ser. No. 318,642

Claims priority, application Japan, Dec. 29, 1971, 47-000242; Mar. 14, 1972, 47-030908

Int. Cl. H01c *1/00*

U.S. Cl. 338—119 **2 Claims**



1. A variable resistor comprising a base plate of an insulating material, a resistor mounted on the base plate, bearing means secured to the base plate, a hollow operating shaft journalled by the bearing means, a brush mount supporting a brush for sliding contact with the resistor, a contact element which is in contact with the brush, and a bundle of optical fiber elements disposed in the hollow operating shaft having an obliquely cut end adjacent to light generating means.

3,848,220

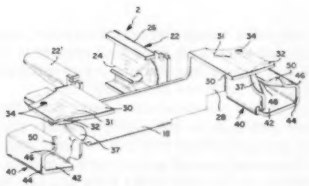
ELECTRICAL CONNECTING DEVICE FOR SERVICE OUTLET

Robert Houston Frantz, Carlisle, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed May 31, 1973, Ser. No. 365,780

Int. Cl. H01r *27/02*

U.S. Cl. 339—32 R **3 Claims**



1. An electrical receptacle terminal intended for use in an electrical service receptacle, said terminal having an elongated buss section extending in a third plane and having a socket portion at each end of said buss section, each of said socket portions being adapted to receive a blade in either of two orientations, each of said socket portions comprising:

a web section extending in a said third plane, first and second contact portions,

said first contact portion comprising a plate-like section extending in a first plane which extends normally of said third plane,

said second contact portion comprising a plate-like section in a second plane which extends normally of said first and third planes, said second contact portion having one edge which extends parallel to, and is spaced from, said first contact plate-like section, whereby said blade is adapted to be inserted between said one edge and said surface of said first contact portion when said blade is parallel to said first plane,

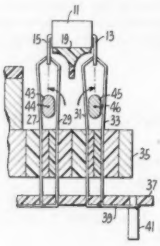
a generally channel-shaped extension on said second contact portion, said extension having one sidewall extending from a second edge of said second contact portion which is on the opposite side thereof from said first edge, said channel-shaped extension having a channel web which is parallel to, and spaced from, said second contact portion and having a second sidewall which extends towards said second contact portion, said second sidewall having a free edge which is spaced from said second contact portion whereby, a blade terminal oriented in said second plane can be inserted between said second edge and said second contact portion.

3,848,221

CONTACT ASSEMBLY UTILIZING FLEXIBLE CONTACTS FOR PINS OF INTEGRATED CIRCUITS

Robert E. Lee, Jr., Mountain View, Calif., assignor to International Production Technology Corporation, Sunnyvale, Calif.

Filed Mar. 7, 1973, Ser. No. 338,966
Int. Cl. H01r *13/62*
U.S. Cl. 339—74 R **9 Claims**



1. An integrated circuit test contractor, comprising:

an elongated track held fixed with respect to a frame to provide a top surface for support of integrated circuit packages to be moved therealong,

first and second elongated cams being eccentric in cross-section with narrow and wide dimensions and rotatable about first and second axes that are fixed with respect to the frame and parallel to said track, said first axis being positioned on one side of the track and said second axis being positioned along an opposite side of said track,

first, second, third and fourth rows of flexible electrically conductive contacts held parallel to said track by rigid attachment of one end of each contact to said frame, the other end of each contact being freely permitted to flex in a path below said support top surface,

said first and second rows of contacts being on opposite sides of said first cam with their free ends extending above said first cam and normally extending inward over said first axis when said first cam is positioned with its narrow dimension between said rows, said first and second rows of contacts being flexed outward when the first cam is positioned with its wide dimension between said rows,

said third and fourth rows of contacts being on opposite sides of said second cam with their free ends extending above said second cam and normally extending inward over said second axis when said second cam is positioned with its narrow dimension between said rows, said third and fourth rows of contacts being flexed outward when the second cam is positioned with its wide dimension between said rows,

resilient means normally holding said cams in a position with each of the first and second cams having their wide dimension positioned between their respective rows of contacts, whereby the free ends of the contacts are normally spread apart, and

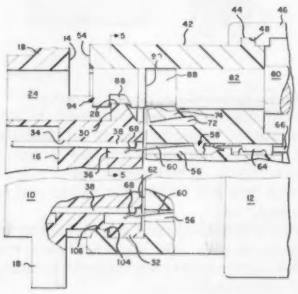
means acting against said resilient means for simultaneously rotating each of said first and second cams to position their narrow dimension between their respective rows of contacts, whereby the free ends of said contacts are closed toward each other.

3,848,222

ZERO ENTRY CONNECTOR SYSTEM

Linn Stephen Lightner, Camp Hill, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Filed July 18, 1973, Ser. No. 380,316
Int. Cl. H01r *13/54*
U.S. Cl. 339—75 M **29 Claims**



1. A low entry force electrical connector system comprising:

a first connector member having a plurality of passive contacts, each said passive contact having a contacting surface and being secured in individual bores in said first connector member;

a second mating connector member having a like plurality of active contacts, each of said active contacts being secured in individual bores in said second connector member and having a contacting surface extending from said bores,

each of said active contacts in said second connector member being associated with a passive contact in said first connector member and being overlappingly spaced apart from said associated contact when said connector members are initially mated;

cam means rotatably mounted on one of said contact carrying connector members and adapted to act directly on the other of said contact carrying connector members to cause relative transverse movement between said members,

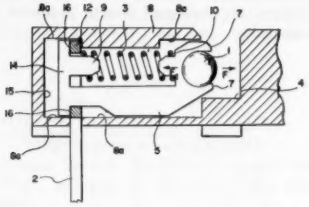
whereby said connector members are initially mated without said contacts engaging and said contacts are brought into engagement by the relative transverse movement resulting from actuating said cam means.

3,848,223

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Lucien Leon Pechard, Dole, France, assignor to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Apr. 16, 1973, Ser. No. 351,537
Claims priority, application France, Apr. 20, 1972, 72.14060
Int. Cl. H05k 1/07
U.S. Cl. 339—176 MP 5 Claims



1. A connector for establishing a respective electrical connection to each of a plurality of spaced contacts carried by and adjacent one edge of a printed circuit board comprising:

a body member having a groove extending longitudinally along said body member for receiving said spaced contacts and the one edge of said printed circuit board;

a ball contact for each spaced contact;

a carrier member for each ball contact carrying the respective ball contact for rotation about the center of the respective ball contact and for movement with the respective carrier member transversely to said groove for enabling each ball contact to be moved into said groove for engaging a respective spaced contact on said printed circuit board; and

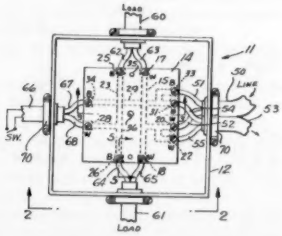
means for biasing each carrier member and the respective ball contact carried by each carrier member toward said groove with the spherical configuration of each ball contact projecting into said groove for engaging a respective one of the spaced contacts on the printed circuit board in response to the receipt of said spaced contacts and the one edge of said printed circuit board in said groove.

3,848,224

PRE-WIRED SWITCH BOX

Carlo Olivero, 66 Saunder St., Dalzell, Ill. 61320

Filed June 15, 1973, Ser. No. 370,317
Int. Cl. H01r 9/00
U.S. Cl. 339—198 E 6 Claims



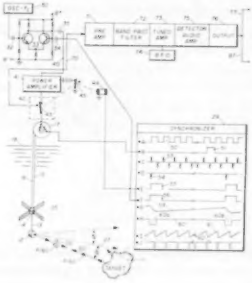
1. In combination, a switch wiring device comprising an insulating body member provided respectively with a pair of supply line terminals, a pair of load terminals and a pair of switch terminals, a first conductor bar in said body member directly connecting one of the line terminals to one of the load terminals, a second conductor bar in said body member connecting the other line terminal to one switch terminal, a third conductor bar in said body member connecting the remaining switch terminal to the remaining load terminal, a pair of power supply wires detachably connected to said supply line terminals, and a switch having a pair of connecting wires detachably connected to said switch terminals, wherein the terminals comprise apertured binding posts provided with wire-clamping screws, wherein said binding posts are integrally formed on the conductor bars, wherein the second conductor bar extends transverse to the first conductor bar in the body member and is spaced therefrom, and wherein the binding posts are located substantially at the edges of the body member and are substantially flush therewith.

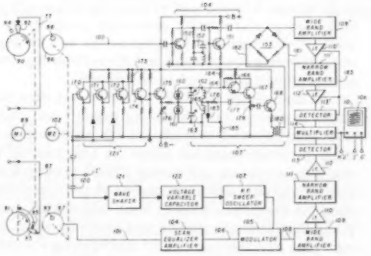
3,848,225

CORRELATION SONAR

Alvin E. Armstrong, Dallas, and Kenneth R. Slater, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Nov. 16, 1961, Ser. No. 153,781
Int. Cl. G01s 9/68, 7/62
U.S. Cl. 340—3 R 4 Claims





1. In sonic ranging the method which comprises at a sending-receiving station transmitting a first pulse having a predominant frequency in the upper sonic range, in the time interval following said first pulse sensing acoustic vibrations returning to sending-receiving station to produce a received signal which includes components representative of echoes of said pulse, the frequency of which is modified relative to the frequency of said pulse in dependence upon the relative velocities between said sending station and any object producing said echoes, producing at least two separate recordings of said received signal, reproducing the recorded signals, generating a pair of high frequency signals each representative of said received signal with the first high frequency signal shifted in

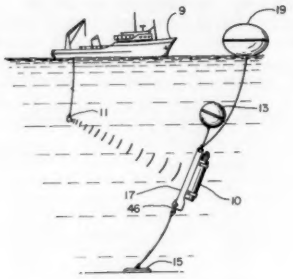
time relative to the second high frequency signal by an amount of the order of one-half the duration of said pulse to bring into time coincidence different time segments of the echo components, generating a timing function which repeatedly varies monotonically from a predetermined level occurring in known time relation to the instant of transmission of said pulse, generating a reference signal which varies in frequency dependence upon said timing function, mixing said reference signal with both of the first and second high frequency signals to produce side band components, detecting said side band components to produce a pair of output signals, and generating a signal from the product of said pair of output signals.

3,848,226

HIGH CAPACITY UNDERWATER ACOUSTIC RELEASE

George R. Perez, Alexandria, Va., assignor to AMF Incorporated, White Plains, N.Y.

Filed Apr. 17, 1973, Ser. No. 352,023
Int. Cl. B66c *1/34*
U.S. Cl. 340—5 R **9 Claims**



1. An underwater release mechanism for releasing a load in response to an acoustic command signal comprising:
   a. an elongated housing containing an acoustic receiver for detecting said command signal;
   b. a pair of evenly spaced support plates disposed longitudinally of said housing and at least coextensive therewith, said support plates being removably coupled to the side walls of said housing by clamp means and having a portion extending beyond one end of said housing for releasably supporting the load to be released;
   c. a release linkage pivotally mounted between said side plates in said portion extending beyond said one end of said housing, said release linkage including a pelican hook pivotally mounted about an axis passing through said support plates and having a hook portion for releasably supporting said load, said hook portion being offset from the axis of said pelican hook, and release arm means pivotally mounted between said plates between said pelican hook and said one end of said housing for preventing said pelican hook from rotating; and
   d. actuating means disposed in said one end of said housing for rotating said release arm means to thereby permit said pelican hook to rotate in response to the detection of a command signal by said acoustic receiver.

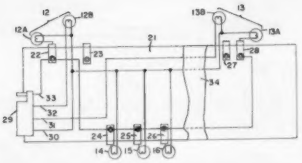
3,848,227

MAGNETIC LIGHT ASSEMBLY

Leon E. Helm, Villa Grove, Ill. 61956

Filed Sept. 18, 1972, Ser. No. 290,231
Int. Cl. B60q *1/26*
U.S. Cl. 340—74 **2 Claims**

1. An apparatus comprising:
   a flat elongated magnetic member constructed of resilient permanent magnetic material which will conformingly and magnetically attach to a curved metal surface;
   a plurality of electrical wires mounted across said member; and,
   an elongated flexible covering secured to said member sandwiching and holding said wires between said member and said covering;
   a bracket fixedly mounted to said member;
   a first electrical light mounted to said bracket and electrically connected to said wires and wherein said member and said covering are adhesively secured together;
   a first metal fastener mounting said bracket to said member and electrically connected directly to one of said wires; and wherein:



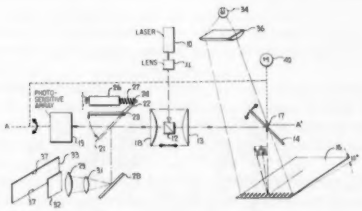
   said bracket is metal with said light electrically connected to and across said bracket and another of said wires;
   a second electric light mounted to said bracket, said second electrical light being electrically connected across two of said wires;
   said first fastener is a first rivet extending through said first bracket and said member with opposite enlarged first ends and with said one wire gripped between one of said ends and said bracket;
   said wire is uninsulated when gripped by said first rivet;
   said first light and said second light are respectively vehicle stop and turn signal lights and further comprising:
   a plurality of additional vehicle brake lights mounted to said member and electrically connected to said one wire and to at least one other of said wires.

3,848,228

VISUAL DISPLAY OF UNRECOGNIZABLE CHARACTERS IN OPTICAL CHARACTER RECOGNITION MACHINES

John H. MacNeill, Indialantic, Fla., assignor to Optical Business Machines, Inc., Melbourne, Fla.

Filed June 7, 1973, Ser. No. 367,880
Int. Cl. G06k *9/02*
U.S. Cl. 340—146.3 F **7 Claims**



1. In an optical character recognition system intended to recognize characters arranged in at least one row by sequentially examining successive characters and including a source of a beam of light, means for projecting the beam of light onto

characters to be recognized and including further means for causing the beam of light to sweep sequentially across the characters in a row, optical image sensing means, means including said further means for directing light reflected from such characters along an optical path to said sensing means, a viewing system characterized by,

a second optical path including means selectively operable to divert light directed toward the sensing means into said second optical path,

a viewing screen,

said second optical path focusing said diverted light on said viewing screen, and

a further source of light for illuminating the characters in a row when light is diverted into said second optical path.

3,848,229

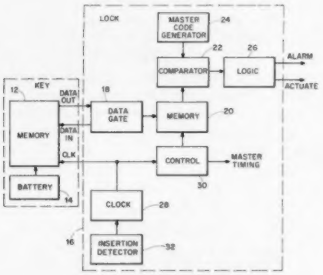
ELECTRONIC LOCK SYSTEM

Robert R. Perron, Beverly, and John T. Fowler, Winthrop, both of Mass., assignors to Arthur D. Little, Inc., Cambridge, Mass.

Continuation of Ser. No. 132,671, April 9, 1971, abandoned. This application July 20, 1972, Ser. No. 273,529

Int. Cl. H04q *9/00*

U.S. Cl. 340—149 A **23 Claims**



1. An electronic lock system comprising:

a key including a structural member adapted for engagement with an associated lock and an electronic data memory therein having a plurality of interconnected stages operative to store an electrically alterable multiple bit key code and terminal means for coupling said key to an associated lock by which said key code can be conveyed from said electronic data memory in response to a clock signal;

a lock adapted for operation with said key and including a receptacle for receiving the structural member of said key in operative engagement therewith;

an electronic data memory for storing a multiple bit master code;

means for comparing said key code stored in said key data memory with said master code stored in said master code memory;

clock means for providing a clock signal to said key data memory to cause readout of said key code to said comparison means for comparison of said key code with said master code;

said comparison means being operative to provide an output indication upon receipt of a key code from said key data memory corresponding to said master code; and

logic means receiving said output indication from said comparison means and operative in response thereto to provide an output signal.

3,848,230

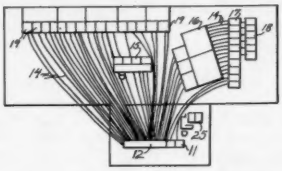
INFORMATION TRANSMISSION SYSTEM

John F. Rehm, Bowie, and Evan E. M. Lloyd, Columbia, both of Md., assignors to The Singer Company, Binghamton, N.Y.

Filed June 15, 1973, Ser. No. 370,456

Int. Cl. H04q *5/24*

U.S. Cl. 340—163 **17 Claims**



1. A system for transmitting information which is originally in both digital form and analog form between a central unit and several widely spaced peripheral units, said system comprising a primary communication path connecting said central unit to all of said peripheral units in parallel, means at said central unit and at each of said peripheral units for converting information to be transmitted over said primary communication path into digital form so that digital information only is carried by said primary communication path, means located at least at each of said peripheral units for converting that information which is transmitted over said primary path and which is intended for analog devices from digital form into the appropriate analog form for said devices, and means for directing information intended for a particular unit to that unit alone.

3,848,231

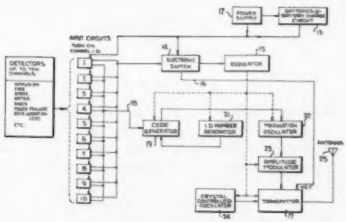
ALARM SYSTEM UTILIZING PULSE POSITION MODULATION AND DUAL CONDUCTOR SENSOR

Thomas S. Wootton, El Paso, Tex., assignor to Baldwin Electronics, Inc., Little Rock, Ark.

Division of Ser. No. 103,203, Dec. 31, 1970, Pat. No. 3,689,888. This application July 24, 1972, Ser. No. 274,250

Int. Cl. G08b *13/08;* **H04q** *1/42*

U.S. Cl. 340—164 R **8 Claims**



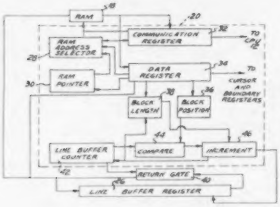
1. A central station for receiving from any one of several peripheral stations transmitted data indicative of the occurrence of any one of several conditions at the peripheral station, said transmitted data including repetitive identical frames of data, each of said frames including piural signals defining channels at least some of which are indicative of the identity of the transmitting station and at least one of which is indicative of the condition occurring at the transmitting station, one of the channels of each frame containing an identifiable pulse, said central station comprising, in combination common receiver means for receiving said data frames from

said several peripheral stations, first means for selecting the channel of each received data frame containing said identifiable pulse, second means for determining the time duration of each channel by measuring the time interval between corresponding portions of adjacent signals of said received data, third means responsive to said first and second means for determining the identity of the transmitting peripheral station and the condition occurring at the station from the time durations of said channels, and fourth means responsive to said third means for indicating the identity of the transmitting peripheral station and the condition occurring at the station.

3,848,232
INTERPRETIVE DISPLAY PROCESSOR

Jerome E. Leibler, Milford; Carl J. Bloch, Ann Arbor; Marvin Preston, IV, Ann Arbor, and Mark D. Weiser, Ann Arbor, all of Mich., assignors to Omnitext, Inc., Ann Arbor, Mich.

Filed July 12, 1973, Ser. No. 378,751
Int. Cl. G06f *3/14*
U.S. Cl. 340—172.5 **26 Claims**



1. A text display processor comprising: means for storing a plurality of digital signals representative of a plurality of strings of text characters in addressable form; means for storing a plurality of digital signals representative of display commands each defining a section of said stored strings of text characters by address and the position of said characters are to occupy in the display in addressable form; a register for storing signals representative of contiguous sections of text to be displayed; means for filling said register with certain of said digital signals representative of strings of text characters from said means for storing text character signals under control of a plurality of said stored display commands; a display means; and means for writing characters on said display means under control of the contents of said register.

3,848,233
METHOD AND APPARATUS FOR INTERFACING WITH A CENTRAL PROCESSING UNIT

Amram Zvi Lotan, Holon, Israel, and Dixson Teh-Chao Jen, Monore, Conn., assignors to Bunker Ramo Corporation, Oak Brook, Ill.

Filed Nov. 1, 1971, Ser. No. 194,677
Int. Cl. G03f *3/04*
U.S. Cl. 340—172.5 **19 Claims**

1. A unit for controlling the transfer of information between a plurality of data bearing lines, which lines are scanned in a predetermined sequence, and a central processing unit (CPU), said information having at least two different priority levels, said unit comprising:

means for indicating the data bearing line being scanned at any given time;

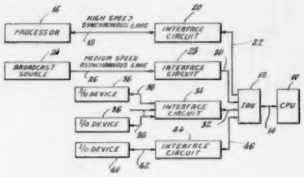
means for detecting the priority level of each item of information applied to said unit;

means responsive to said detecting means for informing the CPU of the availability of information at the detected priority level;

an addressable memory, said memory having an area allocated to each of said priority levels;

input means for indicating the address in said memory at which the next item of information at each of said priority levels is to be stored;

means responsive to said detecting and input indicating



means for storing each applied item of information in said memory;

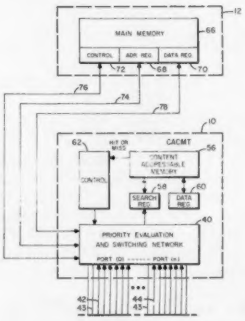
output means for indicating the address in said memory at which is stored the next item of information at each of said priority levels to be transferred to said CPU; and

means responsive at least in part to said informing means and said output means for transferring an item of information from said memory to said CPU.

3,848,234
MULTI-PROCESSOR SYSTEM WITH MULTIPLE CACHE MEMORIES

Thomas Richard MacDonald, Shoreview, Minn., assignor to Sperry Rand Corporation, New York, N.Y.

Filed Apr. 4, 1973, Ser. No. 347,970
Int. Cl. G06f *7/28, 13/08;* **G05b** *13/02*
U.S. Cl. 340—172.5 **14 Claims**



1. In a multi-processor type digital computing system, the combination comprising:

a. a plurality of individual requestor units, each including addressing means for fetching instructions to be executed and executing means for processing data in a sequence of operations in accordance with said instructions;

b. a corresponding plurality of relatively low capacity, high cycle time cache memory units, each unit individually connected to a different one of said requestor units for storing at addressable locations therein a limited number of blocks of information words including operands and instructions to be processed, each said cache memory unit including means responsive to said addressing means for determining whether information sought by its respective requestor unit is available therein;

c. a relatively large capacity low cycle time main memory unit for storing at addressable locations therein a complete complement of blocks of information words usable in the system;

d. a content addressable cache management table connected intermediate said main memory and said plurality of cache memory units for storing a status control word for each block of information words currently stored in said plurality of said cache memory units, said status control words being referenced by a given requestor unit in order to access said main memory when information sought is not available in its associated cache memory unit;

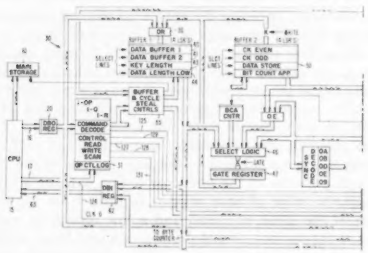
e. means for updating the status control word corresponding to a given block in one of said cache memory units at least the first time in said sequence of operations that a change is made in the information words stored in said given block in said one cache memory unit.

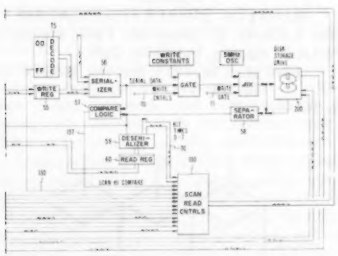
3,848,235

SCAN AND READ CONTROL APPARATUS FOR A DISK STORAGE DRIVE IN A COMPUTER SYSTEM

David Otto Lewis, and Thomas Howard Miller, both of Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1973, Ser. No. 409,215
Int. Cl. G06f *3/06, 13/04*
U.S. Cl. 340—172.5 **13 Claims**





1. In a computer system including main storage, a central processing unit, a disk storage drive, a disk storage drive attachment for connecting said disk storage drive to said central processing unit, the improvement comprising,

means for reading bytes of data from a disk data field in said disk storage drive containing data to be entered into said main storage,

means for reading bytes of data from a scan field in main storage having a search key with the remaining bytes therein set to a predetermined coded value distinguishable from said search key,

compare means for comparing bytes of data read from said scan field with bytes of data read from said disk data field and indicating a compare condition,

decoding means responsive to the first byte of said scan field having said predetermined coded value distinguishable from said search key for generating a mode switching signal, and

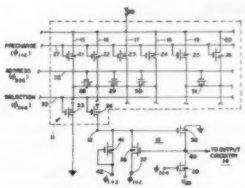
means responsive to said mode switching signal and a compare condition for transferring bytes of data read from said disk data field to said scan field in main storage.

3,848,236

THRESHOLD CIRCUIT

Bruce L. Troutman, Buena Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 11, 1973, Ser. No. 359,573
Int. Cl. G11c *7/00*
U.S. Cl. 340—173 R **2 Claims**



1. In a semiconductor memory system including a memory having address locations for storage of binary information thereat, and means for retrieving information from a desired address location for readout at a data node by precharging said data node to a first voltage level during a precharge interval and discharging said data node to a second voltage level along a primary discharge path through said memory during an evaluation interval as a function of the binary state of information stored at said desired address location, the improvement comprising:

shunt means providing a controlled, secondary discharge path for speeding the discharge of said data node, said shunt means including a shunt field effect transistor having the source-drain path thereof connected between said data node and a voltage source and having a control electrode connected to receive a control voltage in response to the discharging of said data node, said control voltage serving to turn on said shunt field effect transistor to complete said secondary discharge path and thereby decrease the time required to discharge said data node; and wherein

said voltage source connected to said shunt field effect transistor is a clock voltage source which assumes said first voltage level during said precharge interval and assumes said second voltage level during said evaluation interval, whereby said voltage source, if said shunt field effect transistor is conductive during said precharge interval, prevents premature discharge of said data node while contributing to the actual precharge thereof.

3,848,237

HIGH SPEED MOS RANDOM ACCESS READ/WRITE MEMORY DEVICE

Michael Geilhufe, Los Gatos, and Rustam Jehangir Mehta, Sunnyvale, both of Calif., assignors to Advanced Memory Systems, Sunnyvale, Calif.

Filed Feb. 20, 1973, Ser. No. 334,140
Int. Cl. G11c *11/40*
U.S. Cl. 340—173 R **32 Claims**

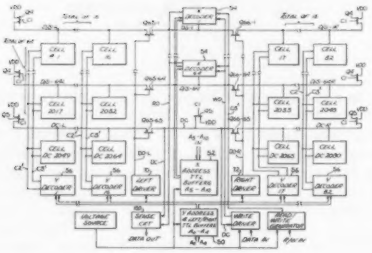
1. In an MOS semiconductor memory,

a plurality of memory cell means arranged in rows and

columns, each said memory cell means having a dynamic storage node and being a means coupled to a data sense line for that row and responsive to a decoded first clock signal for that column to set said data sense line to a logic state opposite the logic state of its said storage node, and responsive to a decoded second clock signal for that column for setting the state of said data sense line into said storage node;

a plurality of data control cell means, each said data control cell means being in one of said columns, each said data control cell means having a dynamic storage node and being a means coupled to a data control line and being responsive to a decoded first clock signal for that column to set a data sense line to a logic state opposite the logic state of its said storage node, and responsive to a decoded second clock signal for that column for setting the state of said data sense line into said storage node;

a plurality of TTL buffer means, each said TTL buffer means being a means for receiving a plurality of TTL address logic signals and presenting, as outputs thereof, the equivalent MOS compatible logic signals and the inverse thereof;



a plurality of X decoder means, each said X decoder means being associated with a row of said memory cell means and being a means for receiving a unique combination of outputs from a first group of said TTL buffer means and for coupling said data sense line for that row to a read output line following the occurrence of a specific and unique combination of inputs to said first group of TTL buffer means;

a plurality of Y decoder means, each said Y decoder means being associated with a column of said memory cell means and said data control cell in said column, and being a means for receiving a unique combination of outputs from a second group of said TTL buffer means and for coupling said first clock signal and said second clock signal, as said decoded first clock signal and said decoded second clock signal, to all said cells in the respective column following the occurrence of a specific and unique combination of inputs to said second combination of TTL buffer means; and

sensing means for sensing the states of said read output line and said data control line and for providing a logic data output signal which is a first logic state signal when said read output line and said data control line is in the same state, and is a second logic state when said read output line and said data control line are in opposite states.

3,848,238

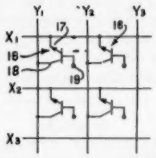
DOUBLE JUNCTION READ ONLY MEMORY

Joseph D. Rizzi, Los Gatos, and Lloyd D. Fagan, Santa Clara, both of Calif., assignors to Intersil Incorporated, Cupertino, Calif.

Division of Ser. No. 97,492, Dec. 14, 1970, Pat. No. 3,733,690, which is a continuation-in-part of Ser. No. 54,531, July 13, 1970, abandoned. This application Apr. 18, 1973, Ser. No. 352,233

Int. Cl. G11c *17/00, 11/36*

U.S. Cl. 340—173 SP **3 Claims**



1. An improved integrated circuit READ ONLY MEMORY matrix comprising a single die of semiconducting material having a plurality of transistors formed therein with an insulating layer on an upper surface of the die having openings therethrough to emitter and base regions of each transistor, a plurality of electrical conductors upon the insulating layer with each conductor engaging the emitter of aligned transistors by extension through openings in said layer into ohmic contact with the emitter regions, said conductors forming matrix columns, a plurality of highly doped buried collector regions in said die below the transistor base regions therein and extending across a plurality of transistors including one of each column to form matrix rows, the collector region of each matrix row extending between the transistors of such row in laterally displaced relation to the base regions of the transistors with portions of the collector region extending laterally beneath the edge of base regions furthest from the emitter region of the same transitor, and a low resistance path disposed at the surface of said die beneath said layer across the base-emitter transistor junction of selected transistors to form a programmed memory.

3,848,239

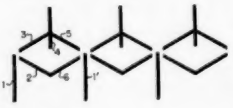
MAGNETIC BUBBLE PROPAGATION

Richmond B. Clover, Jr., Sunnyvale, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 26, 1973, Ser. No. 345,050

Int. Cl. G11c *11/14, 19/00*

U.S. Cl. 340—174 TF **4 Claims**

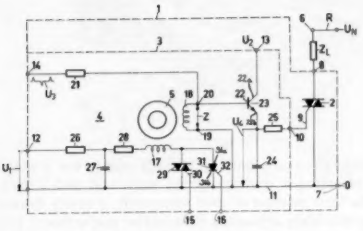


1. A pattern of elements fabricated from a highly permeable magnetic material for use in conjunction with a rotating magnetic field to propagate magnetic bubbles in a magnetic material, said pattern comprising a periodic array of elements, each period of the array comprising a first linear element, first and second oppositely facing chevron-like elements, both of said chevron-like elements positioned adjacent to the same end of the first linear element and having a common axis of symmetry aligned parallel to the first linear element, and a second linear element positioned along this common axis of symmetry and intersecting the first chevron-like element.

3,848,240
STORAGE SWITCH ARRANGEMENT

Eduard Baumann, Uster, Switzerland, assignor to Zellweger AG, Uster, Switzerland

Filed Mar. 26, 1973, Ser. No. 345,016
Claims priority, application Switzerland, Apr. 26, 1972, 6154/72
Int. Cl. G11c *11/06*
U.S. Cl. 340—174 R 7 Claims

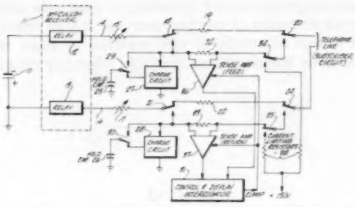


1. A storage switch arrangement comprising a storage switch system incorporating an electronic switch element, a control mechanism operatively associated with the electronic switch element for at least temporarily storing the switching state of the storage switch system, a storage containing magnetizable material provided for said control mechanism, said storage retaining its storage state at least for a certain time duration even upon interruption of the power supply for the storage switch arrangement, said electronic switch element defining a first electronic switch element which is arranged in series with a load impedance, said electronic switch element having a control electrode, said control mechanism having an output, said control electrode being connected with the output of the control mechanism, a supply of AC-voltage, a collecting rail, said control mechanism embodying a voltage divider coupled with the AC-voltage supply and the collecting rail, said voltage divider comprising a resistor and an impedance, said impedance being formed by a reading coil on a core and which core can be magnetized and demagnetized and constituting said storage, a reading coil, said core being operatively associated with the reading coil, a transistor having a control input, the voltage divider having a voltage divider junction, said voltage divider junction being electrically coupled with the control input of said transistor, a DC-voltage supply said transitor further having a collector and an emitter, the collector of the transistor being connected with said DC-voltage supply, a capacitor, the emitter of such transistor being connected with one pole of the capacitor and the other pole of the capacitor being connected with the collecting rail, and wherein said emitter is also galvanically connected with the output of said control mechanism, a further DC-voltage supply, a recording- and erasing coil operatively associated with the magnetizable core, said recording- and erasing coil being arranged in a current circuit connected with a terminal leading to said further DC-voltage supply, said recording- and erasing coil being selectively connectable via a second switching element which passes current in both directions and via a third switching element which passes current only in one direction with the collecting rail, said second switching element receiving control pulses for the switching-in of the storage switch system and the third switching element receiving control pulses for switching-off of said first electronic switch element and therefore the storage switch system.

3,848,241
TEST AND INTEGRITY EQUIPMENT FOR A MCCULLOH SYSTEM

Tom W. LeNay, Encino, and Donald L. Hadden, Fountain Valley, both of Calif., assignors to Baker Industries, Inc., Parsippany, N.J.

Filed Mar. 15, 1973, Ser. No. 341,540
Int. Cl. G08b *13/00, 29/00*
U.S. Cl. 340—214 10 Claims



1. In a McCulloh circuit having a feed line and a return line including a DC voltage source powering a McCulloh receiver at a central station and a plurality of McCulloh transmitters with their associated set contacts located at subscriber locations, a test system therefore comprising;

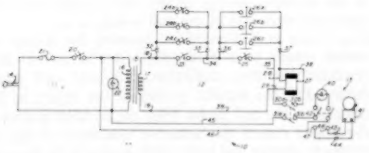
an interrogation means releasably connected at the central station in the feed line and the return line to maintain the normal current in the McCulloh circuit when connected therein, said interrogation means including means for generating a command signal of the opposite polarity of a McCulloh alarm signal and means for receiving a reply signal; and

a plurality of receiver units, each of said receiver units connected in series with a McCulloh transmitter and its associated set contacts at various subscriber locations, each of said receiver units including means for receiving the command signal and means for sequentially responding with a reply signal to said interrogation means without interfering with reception of McCulloh alarm signals.

3,848,242
BURGLAR ALARM SYSTEM WITH SELECTABLE LATCHING MODE

Antoino C. Campagna, 6139 Imogene, Houston, Tex. 77035

Filed Nov. 29, 1972, Ser. No. 310,657
Int. Cl. G08b *13/08*
U.S. Cl. 340—274 3 Claims



1. An alarm system comprising:

a. an alarm circuit including a signal means; and

b. a normally open triggering circuit including one ore more trigger switches attached to a door, window or the like of a protected premises and adapted to close on the movement of said door, window or the like;

c. said triggering circuit including a relay actuatable on the closing of any of said trigger switches and having contacts

in said alarm circuit closeable on actuation of said relay to activate said signal means;

d. said triggering circuit including a switch selectively positional between a closed position, in which said positionable switch is connected, through contacts in said relay, in parallel with said trigger switches, upon said actuation of said relay, to latch-in said relay and an open position which prevents said relay from being locked in but which allows said actuation of said relay and said activation of said signal means as long as one of said trigger switches is closed;

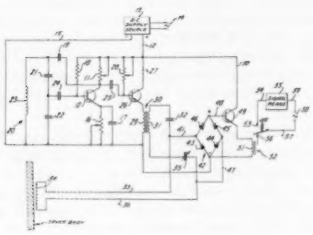
e. said triggering circuit including at least one activator switch internally of said premises and at least one activator switch externally of said premises to allow remote activation and deactivation of said triggering circuit.

3,848,243

INDUCTIVE REACTANCE PROXIMITY ALARM SYSTEM FOR BULKY MOVABLE OBJECTS

Hans A. Schirmer, 20 Westside Ave., Bergenfield, N.J. 07621

Filed Feb. 9, 1973, Ser. No. 330,978
Int. Cl. G08b *13/22*
U.S. Cl. 340—280 **13 Claims**



1. An alarm system for protecting movable objects having at least a metallic portion comprising

oscillator means in a protected location remote from the object to be protected;

tuneable circuit means coupled to said oscillator means for energization thereby, said circuit means having

movable inductive sensing coil means adapted to be mounted on the metallic portion of the movable object to be protected, so that the proximity of said coil means to the metallic portion of the object determines the inductive reactance of the coil means, and

tuning means in said protected location for tuning said circuit means to a predetermined resonant or non-resonant operating condition with said coil means mounted on the metallic portion of the object, so that removal of the coil means from the metallic portion of the object causes the inductive reactance of the coil means to change and said circuit means to be detuned; mounting means for removably mounting said sensing coil means on the metallic portion of the object to be protected;

detector means in said protected location coupled to said tuneable circuit means for producing an output signal in response to a change in the inductive reactance of said coil means; and

alarm signal means in said protected location coupled to said detector means for producing an alarm signal in response to said detector means output signal.

3,848,244

WATER SKIER'S SAFETY DEVICE

John S. Young, and James Goodwin, both of P.O. Box 13544, Phoenix, Ariz. 85002

Filed July 10, 1972, Ser. No. 270,550
Int. Cl. G08c *5/00*
U.S. Cl. 340—286 **8 Claims**

1. For installation on a small watercraft used to tow a water skier and including a transom at the stern end and a deck covering the bow portion of said watercraft, a safety device comprising activating apparatus mounted on said transom and flag raising mechanism mounted on said deck, said activating mechanism comprising:

a. an eyebolt presenting an eye externally of said transom to which a towline is connected, and a shank extending inwardly of said transom;

b. a housing secured to said transom and receiving said shank, with the shank being reciprocal in the housing;

c. a spring abutment on said shank;

d. an expansion coil spring about said shank and interposed between said transom and said abutment, and

e. means on said housing engageable by said shank to render said flag raising mechanism operable;

said flag raising mechanism comprising:

f. a housing secured to said deck and presenting end and side walls;

g. a shaft rotatably mounted between said side walls;

h. a flagpole having one end drivably connected to said shaft and carrying a flag at its other end, said flagpole being adapted to assume a substantially horizontal position along said deck or a vertical position, and

i. operative connections between said means on the housing of said activating apparatus and said shaft to cause rotation of said shaft upon engagement of said means by the shank of said eyebolt to swing said flagpole into a vertical position.

3,848,245

QUENCHED PHOTOLUMINESCENT DISPLAYS AND A POWER CIRCUIT LATCHING MEANS THEREFORE

Robert Marshall, Hickory Hills, Ill., assignor to The Bunker-Ramo Corporation, Oak Brook, Ill.

Continuation-in-part of Ser. No. 885,239, Dec. 15, 1969. This application Jan. 15, 1970, Ser. No. 3,130
Int. Cl. G08b *5/36*
U.S. Cl. 340—324 R **17 Claims**

1. A photoluminescent display device, comprising in combination:

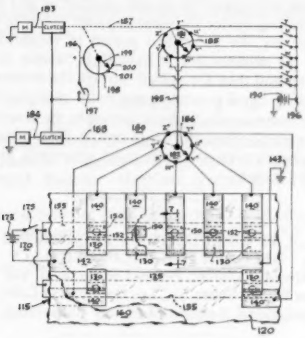
a member having a display surface supporting photoluminescent material susceptible of excitation by electromagnetic energy to produce visible light;

means for directing electromagnetic radiation towards said display surface to excite luminescence of said photoluminescent material;

and heating means underlying selected areas of said photoluminescent material for quenching the luminescence thereof to define a desired display pattern thereon;

wherein the improvement comprises heat-actuated switch means in thermal contact with said heating means and in

electrical communication with an energy source and with said heating means, said switch means being actuated, by momentary increase of the temperature of said heating

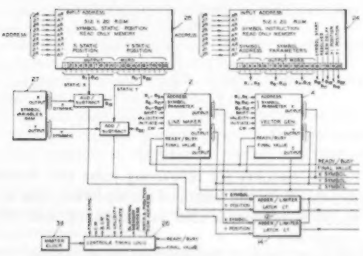


means to quenching temperature, to "on" state, wherein it feeds sufficient energy from said source to maintain said heating means at quenching temperature.

3,848,246
CALLIGRAPHIC SYMBOL GENERATOR USING DIGITAL CIRCUITRY

Kenneth J. Kendall, Fairfield; Carmen M. Telleri, Cranford, and Leonard W. Laniewski, Verona, all of N.J., assignors to The Bendix Corporation, Teterboro, N.J.

Filed June 14, 1971, Ser. No. 152,927
Int. Cl. G06f *3/14*
U.S. Cl. 340—324 A **9 Claims**



1. A symbol generator comprising:

a first memory device for storing symbol description instructions and for providing first digital signals identifying a partcular type of symbol and second signals indicative of symbol parameter data;

a second memory device for storing symbol position instructions and for providing first digital signals which define the position of the symbol relative to one axis and second digital signals which define the position of the symbol relative to another axis normal to the one axis;

a plurality of symbol makers connected to the first instruction memory device and controlled by the first and second digital signals therefrom for providing digital symbol description signals;

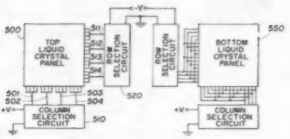
means for combining the first and second digital signals from the second memory device and the digital description signals; and

means connected to the combining means for converting the combined digital signals to analog signals.

3,848,247
MULTI-DIMENSIONAL LIQUID CRYSTAL ASSEMBLY ADDRESSING SYSTEM

Solomon Sherr, Hartsdale, N.Y., assignor to North Hills Electronics, Inc., Glen Cover, N.J.

Filed Feb. 7, 1973, Ser. No. 330,227
Int. Cl. G02f *1/16*
U.S. Cl. 340—324 M **18 Claims**

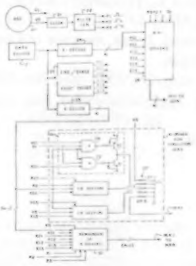


1. A multi-dimensional matrix addressing system, comprising an assembly of liquid crystal units, each containing an array of selectable segments which exhibit discrete light transmitting characteristics in accordance with the presence or absence of stimulation, said units being physically arranged relative to each other to produce a predetermined relationship between their segment arrays, first means for stimulating selected segments of a first unit to exhibit one of said discrete characteristics, second means for stimulating a greater number of selected segments of a second unit to exhibit said one of the discrete characteristics, the stimulated segments of said second unit being physically disposed to correspond only partially to those selected in said first unit.

3,848,248
GASEOUS DISCHARGE DEVICE

Alfred J. MacIntyre, Jr., Nashua, N.H., assignor to Sanders Associates, Inc., Nashua, N.H.

Continuation-in-part of Ser. No. 225,249, Feb. 10, 1972, abandoned. This application Apr. 5, 1973, Ser. No. 348,413
Int. Cl. H05b *37/00*
U.S. Cl. 340—324 M **30 Claims**



1. Display apparatus comprising,

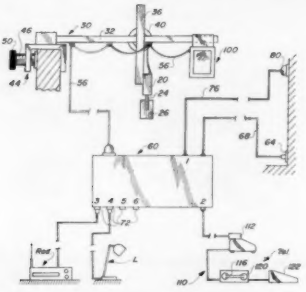
a number of electroformed, ionizable gas filled beads supportably mounted as a layer between first and second sets of conductors in sandwich fashion, the conductor sets being arranged in crossing relationship to form in said layer a plurality of conductor crosspoint or volumes, each containing at least one of the beads; and

means including said conductors for selectively ionizing and deionizing the gas contained in the beads in selected crosspoint volumes.

3,848,249
APPARATUS ACTUATING AND NURSE CALL SYSTEM

Shmuel Meiri, Skokie, Ill., assignor to Northwestern University, Evanston, Ill.

Filed Aug. 14, 1973, Ser. No. 388,105
Int. Cl. G09b *3/02*
U.S. Cl. 340—325 **4 Claims**



1. A switching and display mechanism comprising, in combination,

single switch means for closing and for opening a pair of electrical contacts associated therewith, thereby to complete and to break an electrical circuit,

means for adjustably supporting said switch means near a patient,

visual display means for sequential presentation, for a finite time interval each, of a series of reference symbols, each said symbols being correlated with a particular selectable apparatus to be controlled by said switch means,

a switching mechanism for selectively energizing a particular apparatus,

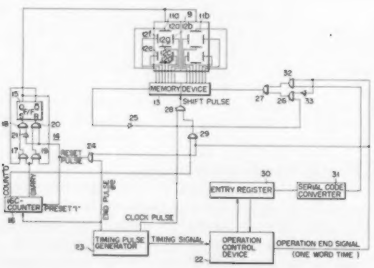
electrical means interconnecting said display means with said switch means and with said switching mechanism,

whereby actuation of said single switch means during the appearance of any and each particular selectable symbol is effective to switch "on" and "off" apparatus correlated with each specific reference symbol displayed.

3,848,250
OPTICAL CHARACTER-DISPLAYING APPARATUS USING LIQUID CRYSTALS

Toshio Kashio, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Aug. 20, 1973, Ser. No. 390,179
Claims priority, application Japan, Aug. 25, 1972, 47-85079
Int. Cl. G08b *5/36*
U.S. Cl. 340—336 **1 Claim**

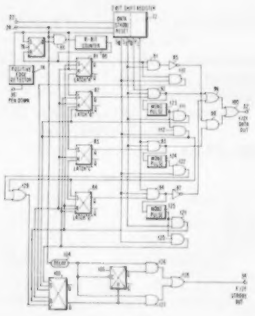


1. An optical character-displaying apparatus using liquid crystals which comprises liquid crystal display devices each including a plurality of segmental liquid crystal display electrodes and a common electrode thereto; a memory device having as many bits as the segmental liquid crystal display electrodes of the display devices; an inverter connected between the input and output terminals of the memory device so as to invert the polarity of signals supplied to said inverter; a shift controlling device for supplying shift pulses to the memory device for the prescribed period in which the signals stored in the memory device have their polarity inverted by the inverter and then are shifted through the memory device; and switching signal generating means for changing the potential of the common electrode according to the inverted potential of the plural segmental liquid crystal display electrodes in synchronization with the shift pulse generated by the shift controlling device.

3,848,251
LOGICAL CIRCUITRY FOR RECOVERING RPM DECODED PRM RECORDED DATA

Dwight George Allmon; Pedro Lee, both of San Jose, and Charles Walter Coker, Jr., Los Gatos, all of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed July 2, 1973, Ser. No. 376,032
Int. Cl. H04l *3/00*
U.S. Cl. 340—347 DD **18 Claims**



1. Logical circuitry for recovering pulse rate modulation recorded data from the output of retrospective pulse modulation decoding apparatus used in recovering said recorded data, comprising

a data input terminal and a strobe input terminal to which data and strobe outputs of said decoding apparatus are applied;

a data output terminal and

a strobe output terminal to which pulse rate modulation data and strobe information are delivered;

a plurality of bistable flip-flop circuits each having input, output and resetting potential terminals;

at least one logical gating circuit having one input terminal connected to one of said output terminal of one of said flip-flop circuits, at least one other input terminal to which data information is applied and an output terminal connected to the first said data output terminal;

a plurality of logical gating circuits having one input terminal of one gating circuit coupled to the first said strobe input terminal one input terminal of another logical gating circuit, the remaining input terminals of said plurality of logical gating circuits being coupled to said flip-flop and said logical gating circuits, and the output terminal of one of said plurality of logical gating circuits being connected to said strobe output terminals; and

a counting circuit having an input terminal connected to said strobe input terminal and having an output terminal, a latching circuit having an input terminal connected to the output terminal of said counting circuit and an output terminal connected to one of said flip-flop circuits for reciprocating the latter at a predetermined count of said counting circuit.

3,848,252

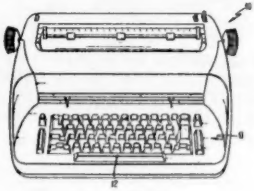
MAGNETIC KEYBOARD

Harry C. Chang, Chelsea; Richard J. Strnad, and Raymond D. Suelflow, both of Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 18,567, March 11, 1970, abandoned. This application Feb. 24, 1972, Ser. No. 228,977

Int. Cl. G06f *3/02*

U.S. Cl. 340—365 L **3 Claims**



1. A keyboard comprising

a plurality of manually operable keys,

a frame,

means movably mounting said keys to said frame,

a plurality of Hall-effect devices each associated with a respective one said keys for providing a change in voltage in response to a change in the magnetic flux density in the region of said Hall-effect device,

a plurality of sources of magnetic flux each associated with a respective one of said Hall-effect devices,

said magnetic flux extending from each of said sources to its respective Hall-effect device,

each of said keys having a ferromagnetic member connected thereto and movable from a first position to a second position in response to manual operation of said key,

the magnitude of the flux density at said respective Hall-effect device being responsive to the position of said ferromagnetic member,

a plurality of differential amplifiers each having input nodes connected across a respective one of said Hall-effect devices so as to amplify said voltage change provided in response to said change in magnetic flux density, and

a plurality of trigger circuits each connected in cascade to a respective one of said differential amplifiers so as to convert the analog output signal of the respective differential amplifier to a binary digital signal.

3,848,253

SIDE LOOKING PULSE RADAR SYSTEM

Jean Genuist, and Guy Le Parquier, Paris, France, assignors to Thomson-CSF, Paris, France

Continuation-in-part of Ser. No. 831,284, June 6, 1966, abandoned. This application June 13, 1972, Ser. No. 262,370

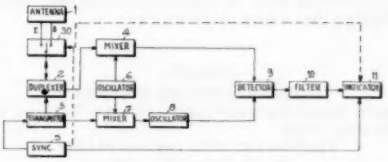
Claims priority, application France, June 18, 1968, 68.155437

Int. Cl. G01s *3/52, 9/42*

U.S. Cl. 343—5 CM **4 Claims**

1. A side looking airborne radar system, for exploring the space laterally with respect to the displacement direction of the aircraft, for producing information signals relative to targets moving with respect to the ground, comprising in combination:

simultaneous lobing aerial means for producing a radiation pattern having two lobes with respective axes symmetrical with each other with respect to a plane which is substantially normal to said displacement direction and having a nil gain along said plane,



transmitting means coupled to said aerial means for transmitting electromagnetic energy toward targets within said lobes, and

receiving means coupled to said aerial means for receiving energy reflected from said targets within said lobes and including coherent detection means connected to said receiving means for receiving and detecting said received energy and low pass filtering means connected to said coherent detecting means for receiving the detected energy and for delivering said information signals corresponding to zero Doppler frequency received signals.

3,848,254

METHOD FOR LOCATING VEHICLES

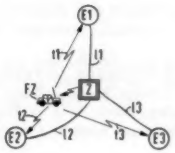
Klaus Drebinger, Munich, and Peer Thilo, Grosshesselohe, both of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Germany

Filed June 14, 1972, Ser. No. 262,626

Claims priority, application Germany, July 28, 1971, 2137846

Int. Cl. G08g *5/00*

U.S. Cl. 343—112 R **22 Claims**



1. A method for locating surface vehicles, particularly in a city area, in which the vehicle to be located transmits a measuring radio signal which is received by a plurality of differently located radio receiving stations, comprising the steps of transmitting from such vehicle, for each location operation, a plurality of measuring signals of relatively low frequency, modulated on a relatively high frequency carrier, receiving such measuring signals by a plurality of receiving stations, greater in number than the minimum number required to define a location, demodulating the received signals in the respective receiving stations, conducting the demodulated signals over respective fixed, corresponding low frequency lines to a central station, deriving correction values by similarly transmitting like measuring signals from a fixed location with known distances to the respective receiving stations, transmitting the corresponding demodulated low frequency

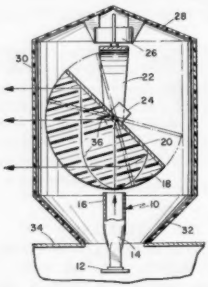
signals from the respective receiving stations to the central station, utilizing thereat corrections derived therefrom to effect corrections in transmission of the corresponding demodulated signals between the central and receiving stations, utilizing the average of a plurality of received corresponding low frequency signals from the respective receiving stations to determine, in the central station by means of a phase comparison, respective transit time differences of the measuring signal on its path towards respective different pairs of receiving stations, and effecting an electronic computation to drive a location-defining point by hyperbolic intersection, thereby determining the location of the vehicle.

3,848,255

STEERABLE RADAR ANTENNA

Philip N. Migdal, La Mesa, Calif., assignor to Teledyne, Inc., San Diego, Calif.

Filed Mar. 22, 1973, Ser. No. 343,819
Int. Cl. H01q *3/12, 15/08*
U.S. Cl. 343—761 **3 Claims**



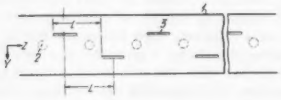
1. A steerable radar antenna comprising:
a drive assembly;
a reflector having a generally hemispherical lens with the substantially planar surface thereof mounted on the reflective surface of said reflector, said reflector and lens comprising a unit operated by said drive assembly; and
at least one stationary feed disposed adjacent to the generally hemispherical surface of said lens and capable of coupling RF energy to said lens.

3,848,256

WAVEGUIDE ANTENNA

George Frederick Craven, Harlow, Essex, and George Alfred Hockham, Takeley, Essex, both of England, assignors to International Standard Electric Corporation, New York, N.Y.

Claims priority, application Great Britain, Dec. 14, 1972, 57690/72
Filed Dec. 10, 1973, Ser. No. 423,344
Int. Cl. H01q *13/10*
U.S. Cl. 343—768 **7 Claims**



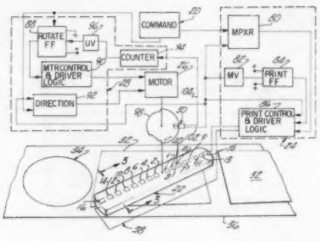
1. A frequency scanning waveguide antenna comprising:
a waveguide having a longitudinal axis, said waveguide being evanescent over the operating frequency band of said antenna;
a plurality of capacitive elements within said waveguide each said element spaced apart from adjacent elements by a predetermined distance *l* and adjusted to provide a conjugate match condition for evanescent mode resonance; and
a plurality of longitudinal radiating slots in the wall of said waveguide, each of said slots located midway between adjacent ones of said capacitive elements.

3,848,257

DEVICE FOR PRINTING CODED LABELS AND THE LIKE

James R. Moss, Mt. Clemens, Mich., assignor to The Bendix Corporation, Southfield, Mich.

Filed Nov. 23, 1973, Ser. No. 418,722
Int. Cl. G01d *1/00*
U.S. Cl. 346—49 **17 Claims**



1. A device for printing labels, each with selected coding comprising command means supplying command signals with the select coding, printing means revolvably positioned opposite the labels and operable in response to the print command signals to print a label with the selected coding during a print cycle thereof, reversible motor means arranged to rotate the printing means in opposite directions during each successive print cycle, sensing means responsive to the position of the printing means and operative to develop motor control signals and print cycle signals, the motor means being operable in response to the command signals to start rotating the printing means and in response to the control print cycle signals to rotate the printing means in one of the opposite directions for a predetermined angular amount, the printing means being operable in response to the print cycle signal to print the selected coding for a certain portion of the rotation thereof by the motor means.

3,848,258

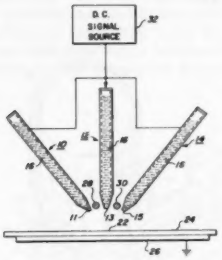
MULTI-JET INK PRINTER

John F. Mahoney, South Pasadena, and Julius Perel, Altadena, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 30, 1973, Ser. No. 392,913
Int. Cl. G01d *15/18*
U.S. Cl. 346—140 **7 Claims**

1. A fluid printer for writing on a record medium comprising:
an array of a plurality of fluid-containing nozzles each having a capillary tip, the array being oriented such that a projection of the longitudinal axes of said nozzles converge toward an area of said record medium,
first means for maintaining the voltage of said record medium at a reference value,
second means for selectively supplying voltage pulses of the same polarity to the fluid contained in said nozzles, said voltage pulses having a peak value different from said reference value,

an electrode disposed between adjacent pairs of said nozzles in the vicinity of said capillary tips of said nozzles, and third means for applying to said electrodes a voltage intermediate said peak value and said reference value thereby



to allow fluid drops from said capillary tips to converge toward said area of said record medium even though the drops have the same polarity due to voltage pulses of the same polarity being applied to the fluid contained in said nozzles.

ERRATUM

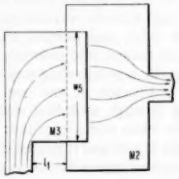
For Class 355—3 see:
Patent No. 3,848,204

3,848,259

MULTICONTROL LOGIC GATE DESIGN

Dennis J. Herrell, Somers, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 30, 1973, Ser. No. 411,123
Int. Cl. H01 *11/09, 3/00*
U.S. Cl. 357—5 **19 Claims**



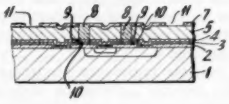
1. A Josephson tunnelling device comprising first and second superconductors having a tunnel barrier therebetween which is sufficiently thin to allow Josephson tunnelling current therethrough, means for producing magnetic fields which intercept said Josephson tunnelling device and establish screening currents therein, and means for causing said screening current to distribute through said tunnel barrier in substantially the same pattern as said Josephson tunnelling current distributes through said tunnel barrier.

3,848,260

ELECTRODE STRUCTURE FOR A SEMICONDUCTOR DEVICE HAVING A SHALLOW JUNCTION AND METHOD FOR FABRICATING SAME

Hideo Tsunemitsu, and Hiroshi Shiba, both of Tokyo, Japan, assignors to Nippon Electric Company, Limited, Tokyo, Japan

Filed Nov. 13, 1972, Ser. No. 305,673
Claims priority, application Japan, Nov. 15, 1971, 46-91405
Int. Cl. H01 *5/00*
U.S. Cl. 357—71 **4 Claims**



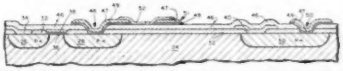
1. A semiconductor device comprising a semiconductor substrate, a silicon oxide film selectively formed over a major surface of said substrate, a first layer of a first metal capable of maintaining good ohmic contact with the semiconductor material of said substrate, a second layer of a second metal formed over said first layer, said second metal forming an alloy reaction with the semiconductor material of said substrate at higher temperatures than said first metal layer, and a third layer of conductive metal formed over said second layer, portions of said first, second, and third layers being selectively anode-oxidized to form a pattern of aligned insulating regions, the unoxidized portions of said first, second, and third metal layers forming an electrode structure, the surface of said third layer being coated with an anode-oxidizing film of the metal of said third layer except for a selected portion thereof which is provided for electrical connection to said electrode structure, the surface of said anode-oxidizing film coating said third layer being substantially flush with the surface of said aligned insulating regions, and said insulating regions and said electrode structure completely covering said silicon oxide film.

3,848,261

MOS INTEGRATED CIRCUIT STRUCTURE

Donald E. Romeo, Torrance, and Neil P. Burcham, Rolling Hills, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Continuation of Ser. No. 264,049, June 19, 1972, abandoned.
This application Nov. 28, 1973, Ser. No. 419,840
Int. Cl. H01 *29/46*
U.S. Cl. 357—71 **4 Claims**



1. An integrated circuit structure, comprising:
a semiconductor substrate of one semiconductivity type:
first, second and third diffused semiconductor regions spaced from each other in said substrate and each being of opposite semiconductivity type relative to said substrate;
a first dielectric layer on said substrate;
a first metallization layer of aluminum on said first dielectric layer and having a first portion extending through said dielectric layer to form a source contact with said first diffused semiconductor region, a second portion extending over the gap between said first and second diffused

semiconductor regions to form a gate, and a third portion extending through said dielectric layer to make ohmic contact with said third diffused semiconductor region;

a second dielectric layer on said first dielectric layer and said first metallization layer;

a second metallization layer of gold on said second dielectric layer and having a first portion extending through both said dielectric layers to form a drain contact with said second diffused semiconductor region, a second portion spaced from said first portion thereof, and a third portion extending through both said dielectric layers and forming ohmic contact with said third diffused semiconductor region at a location spaced from the third portion of said first metallization layer, said third diffused semiconductor region forming a conductive path between the third portions of said first and second metallization layers, respectively; and

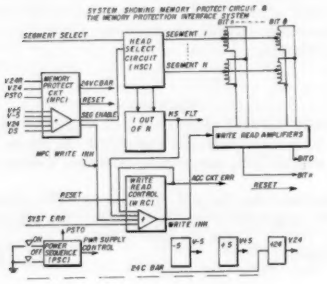
a layer of variable impedance electromagnetic radiation responsive detector material on said second dielectric layer extending between said first and second portions of said second metallization layer and in contact therewith, said detector material being selected from the group consisting of lead sulfide and lead selenide.

3,848,262

DRUM MEMORY PROTECT ARRANGEMENT

Richard J. Belcastro, Schaumburg, Ill., assignor to GTE Automatic Electric Laboratories Incorporated, Northlake, Ill.

Filed Apr. 6, 1973, Ser. No. 348,542
Int. Cl. G11b *19/04*
U.S. Cl. 360—60 **5 Claims**



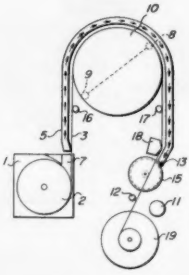
1. In a rotating memory system having a rotating memory and having write and read head means, first power means for driving the rotating memory, second power means for powering the head means, third power means for inhibiting the write and read means and fourth power means for enabling said write and read head means, a memory protect circuit means operated upon application of said first power means to thereafter enable said second and third power means said memory protect circuit means further including power level monitor means operated to provide an output upon any one of said power means going out of range to first disable said fourth power means, and monitor means for sensing the speed of said rotating memory and for providing an output corresponding to said speed to enable said fourth power means so that said fourth power means enables said write and read head means in response to said monitoring means sensing certain rotating memory speeds.

3,848,263

RECORDING AND REPRODUCING SYSTEM WITH AUTOMATIC TAPE THREADING

Tadashi Nagaoka, Nishinomiya, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Sept. 26, 1972, Ser. No. 292,323
Int. Cl. G11b *15/66, 15/26*
U.S. Cl. 360—83 **5 Claims**



1. In a magnetic recording or reproducing system including a pay-off reel having a winding of magnetic tape whose leading end is attached to a leader tape having a rigidity and width greater than that of the magnetic tape; means for rotating said pay-off reel to transport said leader tape, means for defining a magnetic tape traveling way of a circular arc like form, a take-up reel for taking up the leader tape and magnetic tape, a leader tape guide means disposed along and outside of said circular arc traveling way and having along its length a first slot for sliding therethrough said leader tape, said leader tape guide means having an opening along said length and inside of said tape guide means to face said traveling way, said opening having a width greater than the magnetic tape but smaller than said leader tape whereby the latter must travel through said first slot but the former can be brought thereout, and said guide means having one end portion positioned in the vicinity of said pay-off reel and the other end portion positioned in the vicinity of said takeup reel for receiving said leader tape or sending the same out of said first slot, said traveling way dedining means including guide posts and magnetic heads positioned opposite to said opening to be in contact with the magnetic tape brought out through said opening; the improvement comprising means for changing the way of tape travel, said changing means having an outer peripheral surface portion shaped with a small curvature, said surface portion further having a second slot portion of width greater than the magnetic tape but smaller than said leader tape, said changing means being positioned with said surface portion positioned in the vicinity of said other end portion and opposite to the opening of said guide means, said changing means projecting outside of said magnetic tape traveling way and with said small curvature portion positioned on the way of travel of said leader tape sliding through said first slot for guiding said leader tape, wherein when said leader tape comes out of said first slot of said guide means and is guided on said small curvature portion the magnetic tape is caused to go out through said opening of said guide means to travel on said magnetic tape traveling way.

3,848,264

MAGNETIC TAPE CARTRIDGE CHANGER

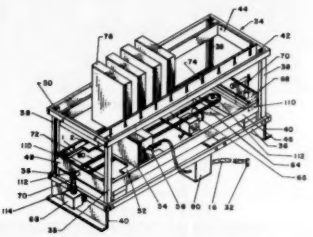
Charles T. Wilson, 121 N. Fountain, Wichita, Kans. 67208

Filed June 8, 1973, Ser. No. 368,303
Int. Cl. G11b *21/12, 23/08*
U.S. Cl. 360—92 **10 Claims**

1. An improved magnetic tape cartridge changer comprising:

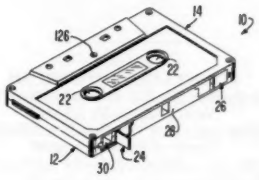
a supporting frame;

a means coupled to said frame for mounting a plurality of tape cartridges substantially parallel and spaced apart along a linear axis;
a plurality of tape cartridges positioned within said tape cartridge mounting means;
a tape transducer and tape drive means;
a carriage frame vertically movably mounted to said supporting frame, said transducer and tape drive means horizontally movably mounted to said carriage;
means coupled to said supporting frame for moving said transducer and tape drive means horizontally within said carriage, whenever said carriage is in a predetermined position;



resilient means for holding said carriage and said transducer and tape drive means into operable engagement with one of said plurality of tape cartridges;
drive means for moving said carriage and said transducer and tape drive means vertically out of engagement with one of said plurality of tape cartridges;
power source;
a plurality of contacts spaced apart and connected to said carriage frame, each of said contacts being aligned with a different one of said plurality of tape cartridges and disposed linearly in a direction of movement horizontally of said transducer and tape drive means;
a movable contact connected to and movable with said transducer and tape drive means and engageable with said plurality of carriage frame contacts;
multiple position selector switch; and
a selector circuit means connected to said selector switch, said carriage drive means, said horizontal moving means for transducer and tape drive means, said power source, said plurality of frame contacts, said movable contact, whereby the predetermined tape cartridge may be engaged operably with said transducer utilizing predetermined positions within the selector switch which are identifiable with corresponding predetermined tape cartridges.

3,848,265
TAPE CASSETTE
Paul J. Biery, San Jose; Vernon R. Schwartz, Cupertino, and Roger N. J. Tregear, San Jose, all of Calif., assignor to Information Terminals Corp., Mountain View, Calif.
Filed July 31, 1972, Ser. No. 276,633
Int. Cl. G11b *23/10, 23/28*
U.S. Cl. 360—132 **7 Claims**



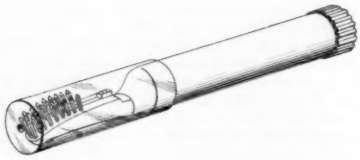
1. In a tape cassette: a housing having a wall provided with a hole therethrough for receiving a sensor pin; a tab for blocking said hole to prevent the insertion of the sensor pin therein; means mounting the tab on the shell for rotation from a first position out of closing relationship to the hole to a second position in closing relationship to said hole, whereby the latter can be selectively blocked; and means engageable with the outer peripheral edge of said tab for releasably holding the same in either of said positions.

DESIGNS

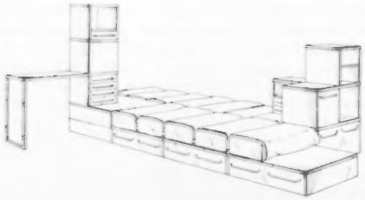
NOVEMBER 12, 1974

233,573
EXPANDED CEREAL FOOD PRODUCT
Stylianos A. Topalis, 1407 Barberry Lane, Mount Prospect, Ill. 60056
Filed Dec. 8, 1972, Ser. No. 313,555
Term of patent 14 years
Int. Cl. D1—*01*
U.S. Cl. D1—1

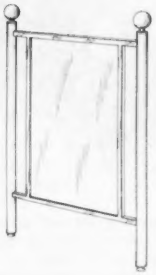
233,574
FOUNTAIN TOOTHBRUSH
Jack Reitknecht, 210 E. Broadway H–503, New York, N.Y. 10002
Filed Jan. 26, 1973, Ser. No. 326,671
Term of patent 14 years
Int. Cl. D4—*02*
U.S. Cl. D4—18



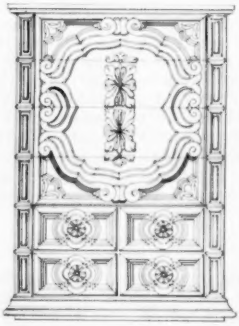
233,575
COMBINED WORK DESK, BED AND MULTIPLE STORAGE UNIT
Walter Mueller, Zurich, Heinrich Gerhard, Haggendorf, and Dieter Stierli, Basel, Switzerland, assignors to Interluebke Gebr. Luebke KG, Wiedenbruck, Germany
Filed Jan. 11, 1973, Ser. No. 322,704
Claims priority, application Germany July 12, 1972
Term of patent 3½ years
Int. Cl. D6—*04*
U.S. Cl. D6—4



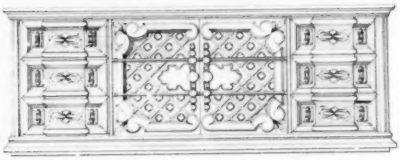
233,576
END SUPPORT FOR A GARMENT DISPLAY RACK
Maurice Cohen, 3580 NW. 52nd St., Miami, Fla. 33142
Filed Aug. 14, 1972, Ser. No. 280,583
Term of patent 14 years
Int. Cl. D20—*02*; D6—*06*
U.S. Cl. D6—85



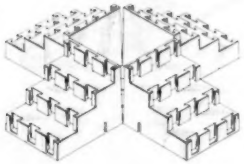
233,577
CHEST OF DRAWERS OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Gillespie Furniture Company, Los Angeles, Calif.
Filed Feb. 1, 1973, Ser. No. 328,607
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154



233,578
DRESSER OR THE LIKE
Huey T. Keller, High Point, N.C., assignor to Gillespie Furniture Company, Los Angeles, Calif.
Filed Feb. 1, 1973, Ser. No. 328,610
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—154

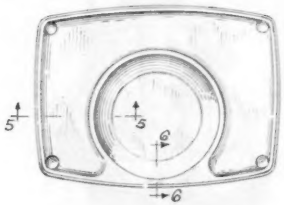


233,579
TOOTHBRUSH DISPLAY STAND
Per Lindbo, Oslo, Norway, assignor to A/S W. Jordan Borste & Penselfabrik, Oslo, Norway
Filed Jan. 11, 1973, Ser. No. 322,888
Term of patent 14 years
Int. Cl. D6—*04*
U.S. Cl. D6—188

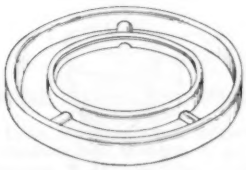


233,580
STRAND OF BEADS FOR A CURTAIN ELEMENT OR THE LIKE
Irving Levine, 5212 Weller Drive, Woodland Hills, Calif. 91364
Filed Oct. 30, 1969, Ser. No. 19,843
Term of patent 14 years
The term of this patent subsequent to Apr. 12, 1984, has been disclaimed
Int. Cl. D6—*10*
U.S. Cl. D6—205

233,581
CAFETERIA SERVICE TRAY
John A. Bridges and Gary C. Degrow, Nashville, Tenn., assignors to Aladdin Industries, Incorporated, Chicago, Ill.
Original design application Nov. 13, 1972, Ser. No. 305,803, now Patent No. 231,424, dated Apr. 23, 1974. Divided and this application Jan. 10, 1974, Ser. No. 432,352
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—38



233,582
COMBINED SPOON REST AND SCRAPER FOR A JAR OR THE LIKE
Gary S. Palumbo, 377 Wyoming Ave., Millburn, N.J. 07041
Filed Mar. 19, 1973, Ser. No. 342,588
Term of patent 14 years
Int. Cl. D7—*99*
U.S. Cl. D7—39



233,583
COMBINED CONDIMENT SHAKER SET AND TRAY THEREFOR
Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed June 11, 1973, Ser. No. 368,891
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—55

233,584
COMBINED CONDIMENT SET AND TRAY THEREFOR
Augusto Salviato, Corso Mario Abbiate 110, Vercelli, Italy
Filed July 23, 1973, Ser. No. 382,098
Claims priority, application Italy Apr. 30, 1973
Term of patent 14 years
Int. Cl. D7—*06*
U.S. Cl. D7—55

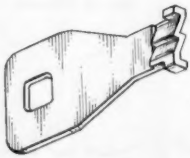
233,585
COOKER
Robert W. Thomas, Wichita, Kans., assignor to William D. Devore and R. A. Devore, Wichita, Kans.
Continuation-in-part of design application Ser. No. 196,254, Nov. 5, 1971, now Patent No. 229,625, dated Dec. 18, 1973. This application Feb. 12, 1973, Ser. No. 331,551
Term of patent 14 years
Int. Cl. D7—*02*
U.S. Cl. D7—94

233,586
SCRAPER OR THE LIKE
Theodore J. Kopp, 9720 227th Place SE., Edmonds, Wash. 98020
Filed Sept. 17, 1973, Ser. No. 397,895
Term of patent 14 years
Int. Cl. D7—*05*
U.S. Cl. D7—181

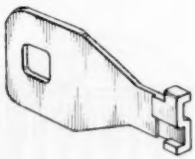
233,587
SCISSORS
Italo Marco Laurenti, 8200 Kennedy Blvd. E., North Bergen, N.J. 07047
Filed Jan. 28, 1974, Ser. No. 436,855
Term of patent 14 years
Int. Cl. D8—*03*
U.S. Cl. D8—57

233,588
GARDEN TOOL SHARPENER
Carl C. Stoutenberg, Avon, Conn., assignor to The Stanley Works, New Britain, Conn.
Filed Jan. 8, 1973, Ser. No. 321,863
Term of patent 14 years
Int. Cl. D8—*05*
U.S. Cl. D8—91

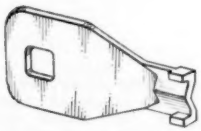
233,589
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,037
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



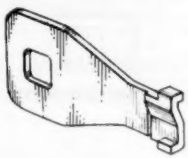
233,590
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,038
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



233,591
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,039
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136

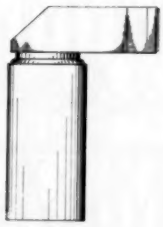


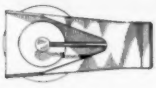
233,592
KEY FOR AN AXIAL TUMBLER-TYPE LOCK
William J. Kerr, Glenview, Ill., assignor to Chicago Lock Co., Chicago, Ill.
Filed Oct. 1, 1973, Ser. No. 402,375
Term of patent 14 years
Int. Cl. D8—*07*
U.S. Cl. D8—136



233,593
COMBINED RECHARGEABLE DISPENSING CONTAINER AND OVERCAP THEREFOR
William Horvath, Chatham, N.J., assignor to Thiokol Corporation, Bristol, Pa.
Filed Apr. 27, 1973, Ser. No. 355,249
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—8

233,594
COMBINED FLUIDS CONTAINER AND APPLICATOR
Lowell T. Fears, Memphis, Tenn., assignor to D'Sal Products, Inc., Memphis, Tenn.
Filed Dec. 20, 1972, Ser. No. 317,085
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—10



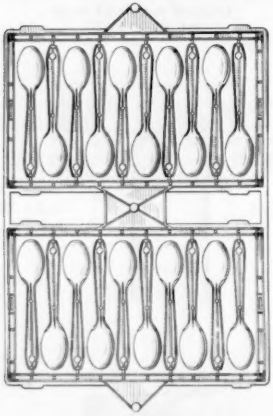


233,595
BOTTLE
John R. Sinding, 613 Richards Road, Wayne, Pa. 19087
Filed June 5, 1973, Ser. No. 367,272
Term of patent 14 years
Int. Cl. D9—*01*
U.S. Cl. D9—39

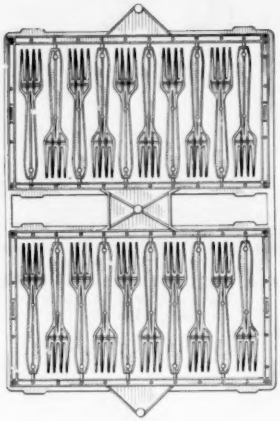
ERRATUM

For Class D9—188 see:
Patent No. D. 233,579

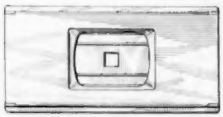
233,596
PACKAGE OF SPOONS OR THE LIKE
Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg, Md., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.
Filed June 29, 1972, Ser. No. 267,366
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193



233,597
PACKAGE OF FORKS OR THE LIKE
Samuel R. Davis, Jr., and Harry A. Watson, Federalsburg, Md., assignors to Ipco Hospital Supply Corporation, Valhalla, N.Y.
Filed Sept. 13, 1972, Ser. No. 288,695
Term of patent 14 years
Int. Cl. D9—*99*
U.S. Cl. D9—193

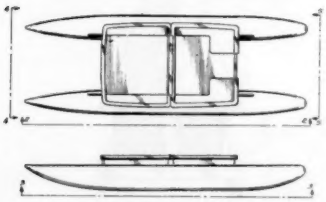


233,598
RAZOR BLADE DISPENSER
Martin Glaberson, Stratford, Conn., assignor to Warner-Lambert Company, Morris Plains, N.J.
Filed Dec. 26, 1972, Ser. No. 318,073
Term of patent 14 years
Int. Cl. D9—*03*
U.S. Cl. D9—224

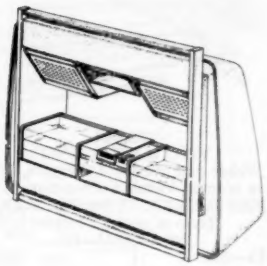


233,599
LID FOR A PACKAGING CONTAINER OR THE LIKE
Paul Davis, Swampscott, Mass., assignor to Sweetheart Plastics, Inc., Wilmington, Mass.
Filed June 28, 1973, Ser. No. 374,688
Term of patent 14 years
Int. Cl. D9—*07*
U.S. Cl. D9—267

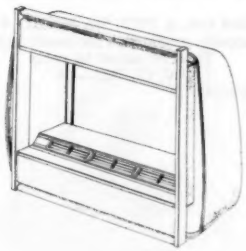
233,600
PONTOON BOAT
Dag C. G. Forssell, Manhattan Beach, and Henry J. Folson, Redondo Beach, Calif., assignors to Vector Company, Manhattan Beach, Calif.
Filed Oct. 12, 1972, Ser. No. 296,783
Term of patent 14 years
Int. Cl. D12—*06*
U.S. Cl. D12—62



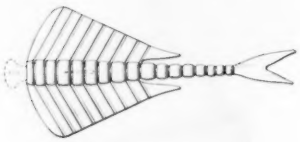
233,601
PREFABRICATED BUILDING UNIT FOR AUDIO AND/OR VISUAL EQUIPMENT
Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,810
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



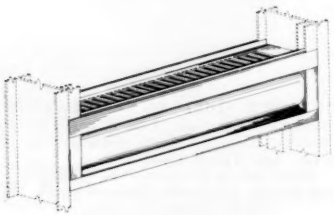
233,602
PREFABRICATED BUILDING VENTILATION UNIT
Tadashi Hanaoka, Kawasaki, Isao Kaneko, Tokyo, and Iwao Shiina, Yamato, Japan, assignors to Misawa Homes Co., Ltd., Tokyo, Japan
Filed Nov. 6, 1972, Ser. No. 303,811
Claims priority, application Japan Sept. 19, 1972
Term of patent 14 years
Int. Cl. D25—*02*
U.S. Cl. D13—1 R



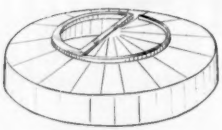
233,603
FISHING LURE
Judson R. Bray, Rte. 1, Box 77, and Freddie L. Bray, Rte. 1, Box 76e, both of Lexington, Mo. 64067
Filed Feb. 14, 1973, Ser. No. 332,244
Term of patent 7 years
Int. Cl. D22—*05*
U.S. Cl. D22—27



233,604
VENTILATOR UNIT
Ronald J. Weber and Wesley J. Higgins, Wausau, Wis., assignors to Wausau Metals Corporation, Wausau, Wis.
Filed Jan. 12, 1973, Ser. No. 322,932
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—151

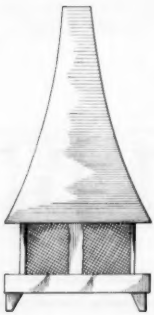


233,605
ROOF-HOOD FOR A VENTILATION TWIN-DUCT
Jorgen Holt, Naestved, Christian Videmark, Haslev, and Palle Hein Christiansen, Naestved, Denmark, assignors to Nordisk Ventilator Co. Aktieselskab, Naestved, Denmark
Filed Dec. 8, 1972, Ser. No. 313,419
Claims priority, application Denmark June 9, 1972
Term of patent 14 years
Int. Cl. D23—*04*
U.S. Cl. D23—163

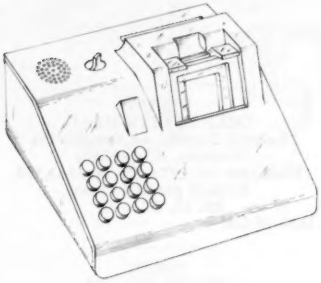


233,606
SPRAY HEAD
Jack Rauh, Hacienda Heights, Calif., assignor to Modern Faucet Manufacturing Company, Los Angeles, Calif.
Filed Dec. 8, 1972, Ser. No. 313,604
Term of patent 14 years
Int. Cl. D23—*01*
U.S. Cl. D23—37

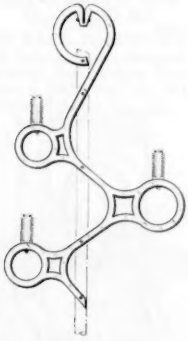
233,607
FIREPLACE
Leonard Eric Welk, R.R. 2, Eganville, Ontario, Canada
Filed Mar. 7, 1973, Ser. No. 338,729
Claims priority, application Canada Sept. 26, 1972
Term of patent 14 years
Int. Cl. D23—*03*
U.S. Cl. D23—97



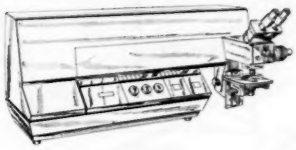
233,608
NUMERIC INPUT/AUDIO OUTPUT MULTIFUNCTION CONSOLE OR THE LIKE
Ronald I. Conway, Port Ewen, Robert V. Jones, Kingston, John J. Natoli, Woodstock, and John V. Stram, Poughkeepsie, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed July 16, 1973, Ser. No. 379,880
Term of patent 14 years
Int. Cl. D14—*02*
U.S. Cl. D26—5 C

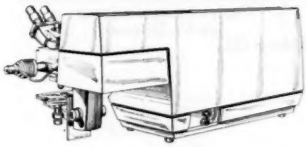


233,609
UTILITY POLE CROSSARM
Edwin B. Spaeth, Jr., 1016 Ward Lane, Blytheville, Ark. 72315
Filed Mar. 12, 1973, Ser. No. 340,350
Term of patent 14 years
Int. Cl. D13—*03*; D8—*08*
U.S. Cl. D26—12



233,610
MICROSCOPE LASER
Gregory F. Fossella, Marshfield, and Peter K. Rhoads, Stow, Mass., assignors to American Optical Corporation, Southbridge, Mass.
Filed Mar. 26, 1973, Ser. No. 344,818
Term of patent 14 years
Int. Cl. D14—*99*; D16—*06*
U.S. Cl. D26—14 L





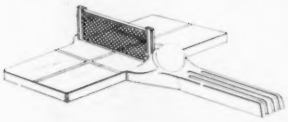
233,611
TELEPHONE SUBSCRIBER SET OR SIMILAR ARTICLE
Herbert Kramer, Furstenfeldbruck, and Tonis Kao, Munich, Germany, assignors to Siemens Aktiengesellschaft, Munich, Germany
Filed Sept. 26, 1973, Ser. No. 400,805
Claims priority, application Germany Mar. 26, 1973
Term of patent 14 years
Int. Cl. D14—*03*
U.S. Cl. D26—14 A

233,612
CIGARETTE LIGHTER
Nobuyoshi Moriya, Urawa, Japan, assignor to Mansei Kogyo Kabushiki Kaisha, Saitama, Japan
Filed Mar. 14, 1973, Ser. No. 341,123
Term of patent 14 years
Int. Cl. D27—*05*
U.S. Cl. D27—42

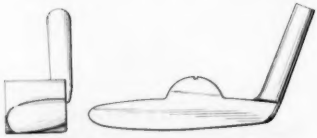
233,613
GOLF TEE CONTAINER
Claude E. Hand III, 5325 Donald St., Eugene, Oreg. 97405
Filed Oct. 24, 1972, Ser. No. 299,826
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 GT

233,614
TENNIS BALL HOLDER
William C. Kinard, 3710 Alder Lane, Pasadena, Calif. 91107
Filed Nov. 3, 1972, Ser. No. 303,638
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—5 ST

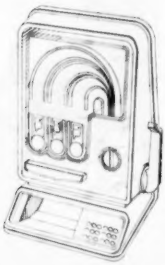
233,615
PADDLE AND BALL TOY
Albert Stubbmann, Franklin Lakes, N.J., and Marie Louise Farber, New York, N.Y., assignors to Kohner Bros, Inc., East Paterson, N.J.
Filed Jan. 19, 1973, Ser. No. 324,950
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 SP



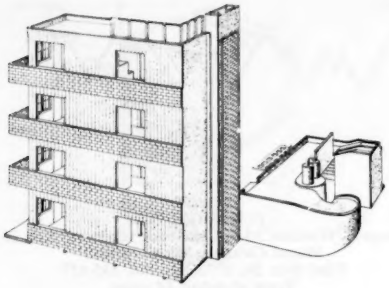
233,616
GOLF PUTTER HEAD
Ralph J. Verzillo, 68 Franklin St., Westerly, R.I. 02891
Filed Mar. 21, 1973, Ser. No. 343,194
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 GH



233,617
GAME CABINET
Marvin I. Glass, Chicago, Ill., Paul J. Ishikawa, South Pasadena, Calif., and John A. Vernon, Bay Shore, L.I., N.Y., assignors to Marvin Glass & Associates, Chicago, Ill.
Filed Apr. 16, 1973, Ser. No. 351,573
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—5 FF

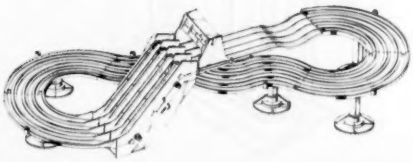


233,618
COMBINED TOY APARTMENT HOUSE AND GARAGE
Jay Smith III, Pacific Palisades, and Anson Sims, Northridge, Calif., assignors to California R & D Center, Pacific Palisades, Calif.
Filed Oct. 19, 1972, Ser. No. 299,156
Term of patent 3½ years
Int. Cl. D21—*01*
U.S. Cl. D34—15 LL

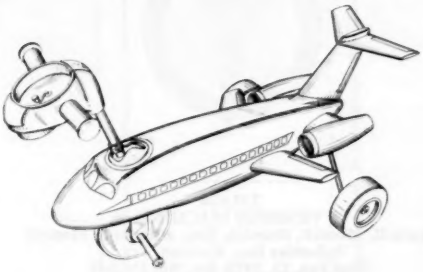


233,619
ROLLER SKATE
Charles B. Kelling, 195 East 2nd North, Moab, Utah 84532
Filed Feb. 20, 1973, Ser. No. 333,888
Term of patent 14 years
Int. Cl. D21—*02*
U.S. Cl. D34—14 C

233,620
TOY RACE TRACKWAY
Yoshizo Seki, Tokyo, Japan, assignor to Tomy Kogyo Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1972, Ser. No. 304,802
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 A



233,621
RIDING VEHICLE
Laurie Jay Campbell, Robert T. Auer, Calvin S. Cook, and Raymond J. Lohr, Erie, Pa., assignors to Louis Marx & Co., Inc.
Filed Apr. 4, 1973, Ser. No. 347,735
Term of patent 14 years
Int. Cl. D21—*01*
U.S. Cl. D34—15 AJ

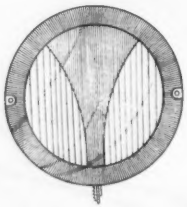


ERRATUM

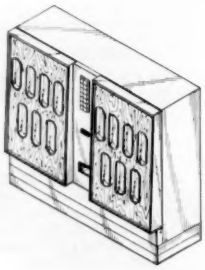
For Class D45—32 see:
Patent No. D. 233,623

233,622
CIGARETTE LIGHTER
Stanley F. Gomersall, Stanmore, England, assignor to Alfred Dunhill Limited, London, England
Filed Nov. 30, 1970, Ser. No. 26,303
Term of patent 7 years
Int. Cl. D27—*05*
U.S. Cl. D48—27 R

233,623
LAMP SET FOR MOTORCYCLES OR THE LIKE
Eugenio Pagani, Milan, Italy, assignor to F. LLI Pagani S.p.A., Milan, Italy
Filed Mar. 2, 1973, Ser. No. 337,600
Claims priority, application Italy Sept. 4, 1972
Term of patent 14 years
Int. Cl. D26—*06*
U.S. Cl. D48—32 R



233,624
VENDING MACHINE
Darla R. Mandell, Houston, Tex., assignor to Marrick Industries Inc., Houston, Tex.
Filed Feb. 23, 1973, Ser. No. 335,049
Term of patent 3½ years
Int. Cl. D20—*01*
U.S. Cl. D52—3 R

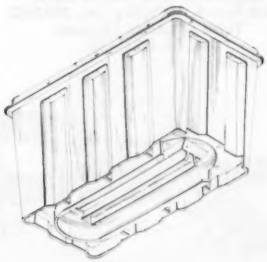


233,625
FLUID PRESSURE TESTING APPARATUS
Gary R. Bluem, 7980 Wynnwood Road, Minneapolis, Minn. 55427
Filed June 4, 1973, Ser. No. 366,487
Term of patent 14 years
Int. Cl. D10—*04*
U.S. Cl. D52—6 R

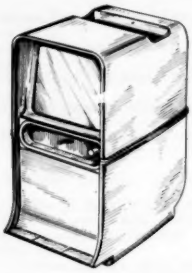
233,626
ARCHITECTURAL PANEL
Marvin H. Williams, New Kensington, Pa., assignor to Aluminum Company of America, Pittsburgh, Pa.
Filed Apr. 5, 1972, Ser. No. 241,493
Term of patent 14 years
Int. Cl. D25—*01*
U.S. Cl. D54—2 A

233,627
TOOLHOLDER
George A. Waddell, 35 S. Groesbeck Highway, Apt. 161, Mount Clemens, Mich. 48043
Filed Feb. 26, 1973, Ser. No. 335,457
Term of patent 14 years
Int. Cl. D15—*09*
U.S. Cl. D54—6

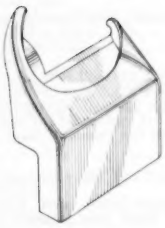
233,628
APERTURE CARD CARTRIDGE AND CLOSURE THEREFOR
Walter B. Dunning, Dale S. Endter, William G. McDonald, and Arthur C. Rissberger, Jr., Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.
Filed Nov. 7, 1972, Ser. No. 304,447
Term of patent 14 years
Int. Cl. D16—*99*
U.S. Cl. D61—1 S



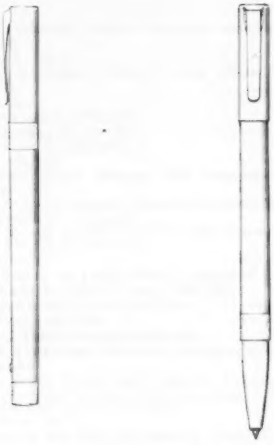
233,629
PICTURE VIEWER
Robert W. Johnson, 52 Hedge Road, Levittown, Pa. 19056, and Henry Leong, 6 Waller Court, Kendall Park, N.J. 08824
Filed Apr. 4, 1973, Ser. No. 348,123
Term of patent 14 years
Int. Cl. D16—*03*
U.S. Cl. D61—1 N



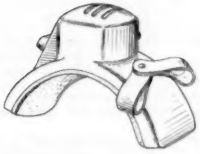
233,630
LOOSE HAIR COLLECTING ATTACHMENT FOR FUR SEWING MACHINE
Fred L. Olday, Box 1255, Scranton, Pa. 18501
Filed Feb. 16, 1973, Ser. No. 333,390
Term of patent 14 years
Int. Cl. D15—*06*
U.S. Cl. D70—2 B



233,631
MARKING PEN
Eugene Defores, Nantes, France, assignor to Societe le Foyer, Paris, France
Filed June 25, 1973, Ser. No. 372,812
Claims priority, application France Dec. 28, 1972
Term of patent 14 years
Int. Cl. D19—*06*
U.S. Cl. D74—17 B



233,632
ELECTRICALLY CURVED HAIR VIBRATOR
Norman Kirk, 9 Rosedale Ave., Montclair, N.J. 07042
Filed Jan. 30, 1974, Ser. No. 437,846
Term of patent 14 years
Int. Cl. D28—*03;* D24—*99*
U.S. Cl. D83—1 S



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TO WHOM

PATENTS WERE ISSUED ON THE 12TH DAY OF NOVEMBER, 1974

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Banchi, Natale. Swimming pool. 3,846,850, Cl. 4-172.190.

Banner, Philip Michael. Emergency fire exit means. 3,847,246, Cl. 182-78.000.

Barbee, Wilford A., to Iowa Beef Processors, Inc. Method of washing tripe. 3,846,869, Cl. 17-43.000.

Barbey, Emile: *See—*
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Bare, Thomas M.: *See—*
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Barnes, Hamilton Nigel, to United Kingdom of Great Britain and Northern Ireland, Minister of Technology in Her Britannic Majesty's Government of the. Vehicle braking systems. 3,847,253, Cl. 188-2.00a.

Barnhart, Robert R.: *See—*
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Barth, John W., to Allis-Chalmers Corporation. Auxiliary power system on a vehicle. 3,847,243, Cl. 180-79.20r.

Bartizal, John J., Jr. Folding machine roller. 3,846,884, Cl. 29-127.000.

Bartl, Herbert: *See—*
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Barton-King Systems Corporation: *See—*
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Bates, Bruce L., to Phillips Petroleum Company. Cryogenic extraction process for natural gas liquids. 3,846,993, Cl. 62-23.000.

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Bauer, Felix; and Valdenaire, Claude. Refuse incinerator. 3,847,095, Cl. 110-14.000.

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Baumann, Hans; Glaser, Rudolf; and Bauer, Peter, 3,847,656.

Bauer, William J. Corrugated conduit. 3,847,186, Cl. 138-173.000.

Baumann, Eduard, to Zellweger AG. Storage switch arrangement. 3,848,240, Cl. 340-174.00r.

Baumann, Hans; Glaser, Rudolf; and Bauer, Peter, to BASF Aktiengesellschaft. Method of coating or bonding metals. 3,847,656, Cl. 117-132.00c.

Baumgaertner, Eugene R., to Allied Chemical Corporation. Ultra-high molecular weight polyethylene molding powder and molding process. 3,847,888, Cl. 260-94.9gd.

Baurle, Horst: *See—*
Ital, Gunter; and Baurle, Horst, 3,847,057.

Baut, Jacques; and Journee, Paul. Windscreen wiper frame. 3,846,864, Cl. 15-250.042.

Bawa, Jaspal S., to Thomas & Betts Corporation. Electrical fitting. 3,847,417, Cl. 285-161.000.

Baxter Laboratories, Inc.: *See—*
Shanbrom, Edward; and Louderback, Allan L. (said Louderback assor. to), 3,847,545.

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Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, to Kali-Chemie Aktiengesellschaft. Production of sulfurtetrafluoride from sulfur chlorides and fluorine. 3,848,064, Cl. 423-469.000.

Bechler, Andre. Automatic thread cutting machine. 3,847,043, Cl. 82-5.000.

Beck, Henry E.; and Peterson, Wayne A., to Caterpillar Tractor Company. Dual control valve assembly. 3,847,059, Cl. 91-413.000.

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Weglage, David E., 3,846,900.

Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, to Reichhold-Albert Chemie Aktiengesellschaft. Vibration-damping sheet metal laminates. 3,847,726, Cl. 161-186.000.

Beckman Instruments, Inc.: *See—*
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Bedford, John A.: *See—*
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Razdan, Raj Kumar; and Thompson, William R., 3,847,928.

Beer, Carl; and Beer, Steven Vincent. Fatless frying pan. 3,847,068, Cl. 99-425.000.

Beer, Steven Vincent: *See—*
Beer, Carl; and Beer, Steven Vincent, 3,847,068.

Beers, Melvin D., to General Electric Company. Two-part room temperature vulcanizable silicone rubber compositions. 3,847,848, Cl. 260-18.00s.

Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., to Rockwell International Corporation. Simulation and measurement apparatus. 3,847,024, Cl. 73-432.0sd.

Behr, Raymond D., to Dow Chemical Company, The. Process of manufacture of film having thickened profiles therein. 3,848,035, Cl. 264-40.000.

Belanger, Inc.: *See*—
Belanger, James A., 3,846,942.

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Belgonucleaire: *See*—
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Bell, David: *See*—
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Bell Telephone Laboratories, Incorporated: *See*—
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Bell-Northern Research Ltd.: *See*—
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Bellows, Guy, to General Electric Company. Apparatus for electrolytic material removal. 3,847,781, Cl. 204-224.00m.

Beltran, Humberto Flores, to Searle, G. D., & Co. Process for the production of diphenoxylate, its derivatives and its salts using an aqueous DMF solvent system. 3,847,926, Cl. 260-293.750.

Ben Kahn Furs Corporation: *See*—
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Bendix Corporation, The: *See*—
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Beran, Pavel: *See*—
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Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, to Societe en nom collectif "Science et Cie," Societe Francaise de Recherche Medicale. Benzenesulfonyl semicarabazides. 3,847,925, Cl. 260-293.730.

Berendsen, Jules Robert: *See*—
Hofman, Emiel Alexander; De Bie, Leo Pierre; and Berendsen, Jules Robert, 3,847,618.

Berger, Charles V., to Universal Oil Products Company. High octane motor fuel production. 3,847,792, Cl. 208-60.000.

Berger, Richard M., to American Filtrona Corporation. Tobacco Smoke filter. 3,847,064, Cl. 93-1.00c.

Berggren, Benny; and Boling, Goran, to Stiftelsen Institutet for mikrovagsteknik vid Tekniska Hogskolan i Stockholm. Apparatus for heating by microwave energy. 3,848,106, Cl. 219-10.550.

Bergles, Eduard, to Fichtel & Sachs AG. Leaf spring biased derailleur arrangement. 3,847,028, Cl. 74-217.00b.

Berkowitz, Murray: *See*—
Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.

Bernaola, Omar A. Methods for the elimination of scors using copolymer films in place of surgical sutures. 3,847,155, Cl. 128-334.00r.

Bernard, Georges F.: *See*—
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Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, to Formitalia Societa Formaceutici Italia. Process for the preparation of ethambutol [2,2'-(ethylene diamino)di-butane 1-ol]. 3,847,991, Cl. 260-584.00r.

Bernheim, Willy; and Deiner, Hans, to Chemische Fabrik Pfersee GmbH. Water-soluble or inherently water-dispersible condensation products which cross link with heating and the use of these condensation products as curing agents for organopolysiloxanes. 3,84,022, Cl. 260-824.0ep.

Berriman, Lester P.: *See*—
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Berry, William R.: *See*—
Schantz, Spencer C.; and Berry, William R., 3,848,205.

Berton, Georges Albert: *See*—
Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, 3,847,547.

Bethke, Erwin, to Smithe, F. L., Machine Company, Inc. Apparatus for collating sheet like elements. 3,847,384, Cl. 271-80.000.

Bethlehem Steel Corporation: *See*—
Furr, Samuel T., 3,847,678.
Herman, Stewart T.; and Horst, Russel J., 3,847,807.
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Bevilacqua, Frank, to Combustion Engineering, Inc. Flow twister for a nuclear reactor. 3,847,736, Cl. 176-78.000.

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Beyer, Hermann: *See*—
Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.

Bialobrzeski, Walter. Vehicle mounted insect exterminator. 3,846,932, Cl. 43-138.000.

Bianchi, John E. Holster. 3,847,315, Cl. 224-2.00c.

Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, to Krauss-Maffei Aktiengesellschaft. Apparatus for the injection molding of synthetic-resin articles. 3,847,525, Cl. 425-245.00r.

Bielkiewicz, Raymond J. Pallet disassembly machine. 3,846,890, Cl. 29-200.00d.

Biery, Paul J.; Schwartz, Vernon R.; and Tregear, Roger N. J., to Information Terminals Corp. Tape cassette. 3,848,265, Cl. 360-132.000.

Bigelow-Stanford, Inc.: *See*—
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.

Billion, Jacques: *See*—
Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.

Binding, Kenneth W., to Beatrice Foods Co. Portable vehicle rack. 3,847,376, Cl. 254-88.000.

Binns, John Michael: *See*—
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Bio/Data Corporation: *See*—
Sokol, Michael; and Kent, Frederick M., 3,847,482.

Biondetti, Mario, to Escher Wyss Aktiengesellschaft. Roller for a pressure treatment of webs. 3,846,883, Cl. 29-116.0ad.

Bischoff, Edward S. Apparatus for fabricating brushes having molded ends. 3,847,532, Cl. 425-500.000.

Bishop, David Paul; and Morris, Ronald Meredith, to NV International Octrooimaatschappij "Octropa". Bis-triazine textile softeners. 3,847,915, Cl. 260-248.0cs.

Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., to Boeing Company, The. Aircraft automatic braking system having auto-brake control logic. 3,847,445, Cl. 303-21.0af.

Bissonette, Vernon Leon; Mowrey, Rowland George; and Sutton, Richard Calvin, to Eastman Kodak Company. Ion-paired cobaltic complexes and photographic elements containing same. 3,847,619, Cl. 96-108.000.

Bitzel, Hubert, to Trumpf Maschinen AG, Firma. Cutting tool having a reciprocating punch with a carrier member interconnecting a head portion and a die portion. 3,847,049, Cl. 83-613.000.

Black and Decker Manufacturing Company, The: *See*—
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Blackley, William D.: *See*—
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,847,887.

Blahak, Johannes, to Bayer Aktiengesellschaft. Process for the production of nitrodiphenyl amine derivatives. 3,847,990, Cl. 260-576.000.

Blakey, Alexander G. Measuring and locating system components. 3,846,917, Cl. 33-180.00r.

Blakslee, Edward Leroy: *See*—
Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, 3,847,786.

Blanc, Marie Jean; and Stievenart, Emile Frans, to Agfa-Gevaert N.V. Roll film radiographic cassette. 3,848,133, Cl. 250-469.000.

Blanchard, Eugene J.: *See*—
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Blanco Rodriguez, Jose: *See*—
Vinals Socias, Luis; Blanco Rodriguez, Jose; and Fernandez Ugalde, Francisco Javier, 3,847,973.

Blankenstein, Gunter: *See*—
Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, 3,848,028.

Blanshine, Allison W., to Sperry Rand Corporation. Scraping paddles for unloading and spreading mechanism used with manure spreaders. 3,847,356, Cl. 239-662.000.

Blatter, Albert Joseph. Displacement measuring and recording apparatus. 3,847,015, Cl. 73-70.000.

Biengsli, Helmer L., to Tekology Corporation. Masonry material. 3,847,632, Cl. 106-97.000.

Blinov, Boris Vladimirovich; and Kukhar, Vasily Valentinovich. Copper-base alloy for high precision resistors. 3,847,602, Cl. 75-161.000.

Bloch, Carl J.: *See*—

Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.

Block, Marshall H.; Hubbard, Gerald L.; and Podolor, Donald E. Apparatus and method for producing fish lure of extruded fish bait composition. 3,846,931, Cl. 43-42.530.

Blomquist, Oskar Vive Elon, to Stabilator Aktiebolag. System for driving objects using pressure or traction forces. 3,847,230, Cl. 173-127.000.

Blomqvist, Nils Verner; and Hagg, Per Borje, to Mo Och Domsjo AB. Apparatus for applying securing tabs to diapers, sanitary towels, compresses and similar absorbent bodies. 3,847,710, Cl. 156-511.000.

Blunt, Harry W., to Hercules Incorporated. Method of preparing small particles of a solid polymer. 3,847,886, Cl. 260-89.100.

Bobst, J., & Fils, S.A.: *See*—
Grutter, Walter, 3,847,030.

Bock, Ronald E.: *See*—
Farfaglia, Silvio T.; and Bock, Ronald E., 3,847,540.

Bockstahler, Earl R., to Dow Chemical Company, The. Substituted phenylthioamidines. 3,847,986, Cl. 260-564.00g.

Boehringer, C. H., Sohn: *See*—
Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, 3,847,922.

Boeing Company, The: *See*—
Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,847,445.
Simpson, Robert D.; and Boone, Jimmie H., 3,847,328.

Boesch, Roger, to Rhone-Poulenc S.A. Phenylhydrazone derivatives. 3,847,987, Cl. 260-566.00b.

Boeye, Paul E.: *See*—
Lehner, Alphonse C.; and Boeye, Paul E., 3,847,276.

Boling, Goran: *See*—
Berggren, Benny; and Boling, Goran, 3,848,106.

Boll, Richard H., to Bailey Meter Company. Constant effective slot length light pipe. 3,847,487, Cl. 356-207.000.

Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., to Rockwell International Corporation. Cross product pickoff for ball gyros of the electrostatic levitation type. 3,847,026, Cl. 74-5.60d.

Bond North Limited: *See*—
Currell, Herbert Henry, 3,847,691.

Bondi, Emanuele, to Fieldcrest Mills, Inc. Method and apparatus for making pile fabrics from a block of pile yarns. 3,847,692, Cl. 156-72.000.

Bonfanti, Giovanni: *See*—
Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, 3,847,903.

Bonin, Jean-Claude, to Roto Diesel. Fuel injection pumps for I.C. engines. 3,847,509, Cl. 417-214.000.

Booker, William J. W., to Oliver Tom's Catering Equipment Limited. Ovens. 3,847,134, Cl. 126-21.00a.

Boon, Bruce Theodore Edward, to Eastern Cyclone Industries, Inc. Pneumatic trash-garbage pickup device. 3,847,293, Cl. 214-302.000.

Boone, David E., to Standard Oil Company. Chromyl bis-(triorganotitanates) and related compounds. 3,847,957, Cl. 260-429.500.

Boone, Jimmie H.: *See*—
Simpson, Robert D.; and Boone, Jimmie H., 3,847,328.

Boothman, David Richard; and Nutt, David Walter, to Canadian General Electric Company, Limited. Circuit for detecting phase unbalance in a three phase supply. 3,848,160, Cl. 317-27.00r.

Borg-Warner (Canada) Ltd.: *See*—
Suykens, Matthieu, 3,847,290.

Boryta, Daniel A., to Foote Mineral Company. Carbon dioxide absorbent granules. 3,847,837, Cl. 252-468.000.

Bosch, Robert, G.m.b.H.: *See*—
Dworak, Wilhelm; and Talmon, Wolfgang, 3,847,519.
Hornung, Friedrich, 3,848,168.
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Rometsch, Werner; and Veil, Karl, 3,846,982.
Staudt, Heinrich, 3,847,127.
Wanner, Karl; Schmid, Wolfgang; Karl, Hubertus; and Falchle, Jorg, 3,847,229.

Boshold, Raymond F., to Wean United, Inc. Turntable apparatus for presses. 3,847,075, Cl. 100-223.000.

Botting, Albert L. Sheath for curling broom. 3,846,862, Cl. 15-210.00r.

Bottoms, Harry Simister, to Lucas Aerospace Limited. Centrifugal pumps for pumping liquids. 3,847,503, Cl. 425-143.000.

Bouchard, Robert J., to Du Pont de Nemours, E. I., and Company. Crystalline bismuth-containing oxides. 3,847,829, Cl. 252-63.500.

Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, to Rhone-Poulenc S.A. Polyoxetanes which can be used in peptide synthesis. 3,847,868, Cl. 260-47.00r.

Boucher, Raymond Claude Emile: *See*—
Taxil, Andre Marc Victorin; and Boucher, Raymond Claude Emile, 3,848,150.

Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, to Societe Generale de Constructions Electriques et Mecaniques (Alsthom). Method of preparing a pattern of a layer of refractory metal by masking. 3,847,776, Cl. 204-192.000.

Boustany, Kamel; and Vander Kooi, John P., to Monsanto Company. N-(thio)diamides. 3,847,879, Cl. 260-79.50b.

Bowes, Robert J.; and Kerstetter, Donald R., to GTE Sylvania Incorporated. Cathode ray tube antenna getter structure comprising permanent phase transformation bimetallic material. 3,848,154, Cl. 313-481.000.

Bowley, Wallace William, 1/2 to Ritchie, William Barney, Jr. Floating wave barrier. 3,846,990, Cl. 61-5.000.

Boyadjieff, George I.; and Otsap, Ben A., to Varco International, Inc. Well safety valve having mechanism shielded from fluid flow. 3,847,216, Cl. 166-72.000.

Boyadjieff, George I.; and Otsap, Ben A., to Varco International, Inc. Ball type well safety valve apparatus. 3,847,218, Cl. 166-224.00a.

Boyd, Bruce; Espersen, Peter G.; and Heyser, Lewis S., Sr., to United States of America, Air Force. Boost-surge power supply. 3,848,197, Cl. 330-44.000.

BP Chemicals International Limited: *See*—
Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, 3,847,965.

Braden, William B., Jr., to Texaco Inc. Treatment of an underground formation containing water-sensitive clays. 3,847,222, Cl. 166-303.000.

Brake, Jon M.; and Deindoerfer, Fred H., to American Hospital Supply Corporation. Blood collection and preservation unit. 3,847,738, Cl. 195-1.800.

Brana Fernandez, Miguel; and Roldan Martinez, Christobal, to Laboratories Made, S.A. 5-Hydroxytryptophan alpha-ketoglutarate and its derivatives. 3,847,941, Cl. 260-326.140.

Brandenburg, Dietrich; and Puls, Walter, to Bayer Aktiengesellschaft. Process for the preparation of insulin derivatives cross-linked by a dicarboxylic acid group at the amino A-1 glycine and amino B-29 lyaine. 3,847,893, Cl. 260-112.700.

Brandl, Eugene H.; and McHugh, Neil M., to Colgate-Palmolive Company. Polish. 3,847,622, Cl. 106-10.000.

Brandon, Kenneth F.; and Perconti, Thomas J., to Eastman Kodak Company. Method and apparatus for grouping and handling a plurality of webs. 3,847,319, Cl. 226-4.000.

Brant, William; and Schenk, Richard C., to Xerox Corporation. Stacking control apparatus. 3,847,391, Cl. 271-220.000.

Braun, Oskar, to Pfaff Industriemaschinen G.m.b.H., Firma. Ribbon feeding attachment for sewing machines. 3,847,099, Cl. 112-152.000.

Braun, Wilhelm, to SKF Kugellagerfabriken GmbH. Mounting apparatus for spinning assembly. 3,846,967, Cl. 57-78.000.

Breber, Henry. Supplemental insulation with bypass impedance for electrical lines. 3,848,076, Cl. 174-141.00r.

Bredereck, Hellmut F. I.; Iliopulos, Miltiadis I.; and Wieder, Horst F. Bis-(P-hydroxyphenyl) alkylphosponic acid ester condensation polymers. 3,847,866, Cl. 260-47.0xa.

Breslow, David W.; and Simpson, David A., to Hercules Incorporated. Photopolymer process forming graft polymers in exposed areas. 3,847,609, Cl. 96-33.000.

Breuer, Hermann; and Treuner, Uwe D., to Squibb, E. R., & Sons, Inc. 6-Styrylpyraz olo(3,4-D)pyrimidinones and pyrimidines. 3,847,908, Cl. 260-240.00d.

Bridgestone Tire Company Limited: *See*—
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Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.

Brien, James J. Flossomatic. 3,847,167, Cl. 132-92.00r.

Briggs, Aubrey C., to Drano Corporation. Material digging and transporting apparatus. 3,847,270, Cl. 198-140.000.

Bringewald, August R., to Bringewald Process Corporation. Apparatus and method for applying pressure and die and method for forming a part. 3,847,004, Cl. 72-184.000.

Bringewald Process Corporation: *See*—
Bringewald, August R., 3,847,004.

Brinkmann Instruments, Inc.: *See*—
Kopp, Reiner H.; and Holland, Heino H., 3,847,200.

British Iron and Steel Research Association, The: *See*—
Marr, Harry Sidney; and Chester, Arnold, 3,847,312.

British Petroleum Company Limited, The: *See*—
Champagnat, Alfred; and Laine, Bernard Maurice, 3,847,739.

Brodersen, Richard: *See*—
Radscheit, Kurt; Stache, Ulrich; and Brodersen, Richard, 3,847,906.

Broemer, Heinz; and Meinert, Norbert, to Leitz, Ernst, GmbH. Fluorophosphate optical glass. 3,847,624, Cl. 106-47.00q.

Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, to Deutsche Gold- und Silber-Scheideanstalt vormals Roessler. Ceramic color bodies. 3,847,639, Cl. 106-288.00b.

Bromels, Marilyn H.: *See*—
Pedersen, Charles John; and Bromels, Marilyn H., 3,847,949.

Brosene, William G., Jr., to Magnum Automotive Equipment, Inc. Centerpost drive mechanism. 3,847,198, Cl. 157-1.240.

Brouneus, Harold A., to Corning Glass Works. Electrical heating unit. 3,848,111, Cl. 219-543.000.

Brown & Root, Incorporated: *See*—
Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.

Brown & Williamson Tobacco Corporation: *See*—
Molyneux, David J., 3,847,163.

Brown, Boveri & Company: *See*—
Sova, Vladimir, 3,847,649.

Brown, Dorian W. Applicator for applying a lubricant and de-icer to a fishing line. 3,846,930, Cl. 43-25.000.

Brown, Francis Barton; and Erickson, John W., to Kobe, Inc. Free turbine pump. 3,847,512, Cl. 417-365.000.

Brown, Kenneth H.: *See—*
Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,847,770.

Brown, Melancthon S.: *See—*
Kohn, Gustave K.; and Brown, Melancthon S., 3,847,951.

Brown Oil Tools, Inc.: *See—*
Bufkin, Stephen L., 3,847,040.

Brown, Robert S., to Standard Steel Products Corporation. Sealed tube connectors. 3,847,419, Cl. 285-330.000.

Brownbill, Thomas Duncan. Variable throw rocker. 3,847,007, Cl. 72-393.000.

Brunstetter, Frank H., to Hi-Tor Inventions Corporation. Nail-screw holder. 3,847,193, Cl. 145-46.000.

Bryant, Robert G., to Gem Industries, Inc. Safety trip lock for cribs. 3,846,854, Cl. 5-100.000.

Brydole, Robert, to Acme General Corporation. Hinge for door with hollow stile. 3,846,867, Cl. 16-181.000.

Brydolf, Robert, to Acme General Corporation. Hinge for door with hollow stile. 3,846,868, Cl. 16-181.000.

Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, to Knoll A.G. Chemische Fabriken. 1,5-Benzodiazepine derivatives. 3,847,905, Cl. 260-239.30b.

Buccicone, Dario, to Buccicone Engineering Co., Inc. Magnetic rail type conveyor unit. 3,847,269, Cl. 198-41.000.

Buccicone Engineering Co., Inc.: *See—*
Buccicone, Dario, 3,847,269.

Buchanan, George E.: *See—*
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Buckley, Donald J., Sr.: *See—*
Canter, Nathan H.; and Buckley, Donald J., Sr., 3,847,854.

Buddrus, Curt. Hudraulic marine propulsion and guidance system. 3,847,107, Cl. 115-35.000.

Budrys, Vitolis: *See—*
Erickson, John W.; and Budrys, Vitolis, 3,847,327.

Bufkin, Stephen L., to Brown Oil Tools, Inc. Torque limit means for powered pipe wrench means. 3,847,040, Cl. 81-57.180.

Buhayar, Eric S., to Scott Paper Company. Turning device for flexible web product. 3,847,273, Cl. 198-236.000.

Bunker Ramo Corporation: *See—*
Lotan, Amram Zvi; and Jen, Dixson Teh-Chao, 3,848,233.
Pechard, Lucien Leon, 3,848,223.

Bunker-Ramo Corporation, The: *See—*
Marshall, Robert, 3,848,245.

Buran, Vojtech; Horn, Vladimir; and Suchanek, Borivoj, to Vyzkumny a vyvojovy ustav Zavodu vseobechneho strojirenstvi. Weft inserting channel for pneumatic weaving machines. 3,847,187, Cl. 139-127.000.

Burcham, Neil P.: *See—*
Romeo, Donald E.; and Burcham, Neil P., 3,848,261.

Burck, Peter, to VEB Rathenower Optische Werke. Device for thinning technical and microscopic specimens under laminar flow conditions. 3,847,780, Cl. 204-224.00r.

Burg, Karlheinz: *See—*
Sextro, Gunter; and Burg, Karlheinz, 3,848,021.

Burg, Karlheinz; and Schlaf, Helmut, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for producing homo- and compolymers of cyclic acetals. 3,848,020, Cl. 260-823.000.

Burkin, Jury Alexandrovich; and Seleznev, Jury Emelyanovich. Mechanism for feeding and fixing magnetic cores in a memory matrix interweaving device. 3,846,893, Cl. 29-203.0mm.

Burlington Industries, Inc.: *See—*
Quynn, Richard G., 3,847,544.

Burnett, George E. Eraser for ball point pen. 3,846,866, Cl. 15-425.000.

Burnham, Benjamin K., to Thayer, Inc. Folding stroller. 3,847,406, Cl. 280-36.00b.

Burroughs Corporation: *See—*
Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.

Burruss, Robert Page, Jr.: *See—*
Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.

Burt, Glenn R.; Condo, Albert C.; and Knight, George R., to Atlantic Richfield Company. Insulated embankment design techniques. 3,846,989, Cl. 61-.500.

Busse, Rido. Frame means. 3,846,925, Cl. 40-16.200.

Busselmeier, Otto. Snap coupling for fluid conduits. 3,847,393, Cl. 285-315.000.

Bussey, Robert William; and Powers, John Glenn, to TRW, Inc. Mounting assembly for a convergence coil. 3,848,207, Cl. 335-210.000.

Butler Manufacturing Company: *See—*
Cox, Delbert L., 3,847,266.

Byrd, Clarence D., to Safety Devices Incorporated. Safety lowering device. 3,847,377, Cl. 254-158.000.

Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., to United States of America, Atomic Energy Commission. Method and apparatus for extruding ceramic tubes. 3,847,535, Cl. 425-291.000.

Caillouette, James C.; and Johnson, Paul E. Medico-surgical tube. 3,847,157, Cl. 128-348.000.

Cal Detect, Inc.: *See—*
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Caldwell, Alan K., to Rewop Company. Variable displacement gear pump. 3,847,515, Cl. 418-16.000.

Callahan, James L.; Miller, Arthur F.; and Shaw, Filfrid G., to Standard Oil Company, The. Process for preparing aggregates. 3,848,033, Cl. 264-13.000.

Callahan, Stephen Phillips: *See—*
Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.

Cameron, Thomas M.; and Kellogg, John L., to International Harvester. Fuel tank and hydraulic reservoir arrangement. 3,847,241, Cl. 180-54.00r.

Campagna, Antoino C. Burglar alarm system with selectable latching mode. 3,848,242, Cl. 340-274.000.

Campagnie Internationale Pour l'Informatique: *See—*
Lazzari, Jean-Pierre, 3,848,217.

Campbell, Curtis M.; and Miller, Ronald J., to Sperry Rand Corporation. Control system for providing a spiral flight path to a radio beacon. 3,848,114, Cl. 235-150.260.

Campbell, Don A.: *See—*
Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.

Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., to Fairchild Camera and Instrument Corporation. Method of protecting against electrochemical effects during metal etching. 3,847,690, Cl. 156-13.000.

Canada-Cities Service Ltd.: *See—*
Cymbalisty, Lubomyr M. O., 3,847,789.

Canadian General Electric Company, Limited: *See—*
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Canadian Industries Limited: *See—*
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Cannon, Raybon C.; and Wiesboeck, Robert A., to United States Steel Corporation. Process for the manufacture of high-purity lithium hexafluoroarsenate. 3,848,063, Cl. 423-464.000.

Canon Kabushiki Kaisha: *See—*
Endo, Ichiro; and Yamanouchi, Teruo, 3,847,607.
Kondo, Eiichi; and Hasegawa, Tetsuo, 3,847,605.

Canter, Nathan H.; and Buckley, Donald J., Sr., to Esso Research and Engineering Company. Preferential plasticization of ionometric compounds. 3,847,854, Cl. 260-23.70m.

Canup, Robert Eugene, to Texaco Inc. Ignition system utilizing a saturable-core square wave oscillator circuit. 3,847,129, Cl. 123-148.00e.

Caporiccio, Gerardo: *See—*
Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, 3,847,978.

Card & Co. Inc.: *See—*
Hammel, Wallace W., Jr., 3,847,098.

Carey, Curtis D.; and Platzke, Ronald N., to Kennecott Copper Corporation. Process for recovering selenium values from aqueous solutions containing molybdenum, rhenium and selenium values. 3,848,069, Cl. 423-508.000.

Carol, Jose M. Rigid means to support a roll of toilet paper on a dispenser bracket. 3,847,365, Cl. 242-55.200.

Carr, Uriah H. Hair shaper. 3,847,166, Cl. 132-9.000.

Carrcraft Manufacturing Company: *See—*
Anderson, Kenneth J., 3,847,175.

Carrell, Ross Michael, to RCA Corporation. Optical scanner control system. 3,848,087, Cl. 178-7.600.

Carroll, Clifford C., to Deering Milliken Research Corporation. Reducing shrinkage of textile materials. 3,847,543, Cl. 8-127.600.

Cartaya, Guillermo Hernandez: *See—*
Lam, Lucilo; and Cartaya, Guillermo Hernandez, 3,846,914.

Casciola, Massimo. Impact-absorbing assemblies. 3,847,252, Cl. 188-1.00c.

Case, Derek Frank, to International Computer Limited. Methods of manufacturing magnetic transducing heads. 3,846,906, Cl. 29-603.000.

Case-Shawmut Company, The: *See—*
Kozacka, Frederick J.; and Salzer, Erwin, 3,848,215.

Caserio, Frederick F., Jr.; and Nakaguchi, Glenn M., to Atlantic Richfield Company. Process for preparation of carbonyl compounds and isobutylene from olefins and t-butyl alcohol. 3,847,996, Cl. 260-604.0ac.

Cashin Systems Corporation: *See—*
Divan, William J., 3,846,957.
Divan, William J., 3,846,958.

Casio Computer Co., Ltd.: *See—*
Kashio, Toshio, 3,848,250.

Castelli, Joseph L., to General Electric Company. Coalescing plate for fluid mixture plate separator. 3,847,813, Cl. 210-232.000.

Caterpillar Tractor Company: *See—*
Avery, Bennett W., 3,847,248.
Beck, Henry E.; and Peterson, Wayne A., 3,847,059.
Freedy, Allan L.; and Risk, Norman E., 3,846,983.
Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, 3,847,451.
Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.
Kennicutt, Robert B.; and Mounts, William T., 3,847,492.
Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., 3,847,180.
Shoup, Stephen G., 3,847,240.

Catlos, Peter V.; and Somann, Gert, to Ferplas Industries Limited. Buckle-strap belt. 3,846,875, Cl. 24-200.000.

C.A.V. Limited: *See—*
Fenne, Ivor, 3,847,510.
Cavins Co., The: *See—*
Spiri, Willy H., 3,846,877.
Celanese Coatings & Specialties Company: *See—*
Watkins, Edward Davis, 3,848,029.
Celanese Corporation: *See—*
Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., 3,848,003.
Centenary Central, Inc.: *See—*
Miller, Orville C., 3,847,036.
Central Glass Co., Ltd.: *See—*
Katsuragawa, Seiichi; and Fujinaga, Teruo, 3,848,004.
Centre Technique des Industries Mecaniques: *See—*
Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.
Centro Sperimentale Metallurgico S.p.A.: *See—*
Ramacciotti, Aldo; and Eminian, Giancarlo, 3,847,593.
Chabardes, Pierre; Julia, Marc; and Menet, Albert, to Rhone-Poulenc S.A. Methylene-sulphones from the terpene series. 3,848,000, Cl. 260-607.00a.
Chafetz, Harry: *See—*
Siegart, William R.; Blackley, William D.; and Chafetz, Harry, 3,847,887.
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., to Columbia Broadcasting System, Inc. Apparatus for providing ball ends on guitar strings. 3,846,888, Cl. 29-200.00b.
Champagnat, Alfred; and Laine, Bernard Maurice, to British Petroleum Company Limited, The. Cultivation of micro-organisms on a feedstock consisting at least in part of straight chain hydrocarbons. 3,847,739, Cl. 195-28.00r.
Chandrasekaran, Swayambu: *See—*
Mueller, Max B.; and Chandrasekaran, Swayambu, 3,847,881.
Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, to Rhone-Progil. Separation of dichlorobenzene isomers by extractive distillation with an aprotic polar solvent. 3,847,755, Cl. 203-57.000.
Chang, Harry C.; Strand, Richard J.; and Suelflow, Raymond D., to International Business Machines Corporation. Magnetic keyboard. 3,848,252, Cl. 340-365.00l.
Channell, William H. Terminal and splice enclosure for cable installations. 3,848,074, Cl. 174-38.000.
Chapman, A. W., Limited: *See—*
Adams, Albert John, 3,847,338.
Chapman, James E.: *See—*
Hayward, Robert D.; and Chapman, James E., 3,847,463.
Charlez, Rune Kjell Evald. Nailing device. 3,847,321, Cl. 227-7.000.
Chase, John Donald; and Potter, Robert Louis, to American Cyanamid Company. Fire resistant acrylonitrile polymer articles containing submicron antimony oxide particles. 3,847,864, Cl. 260-45.75b.
Chase-Shawmut Company, The: *See—*
Salzer, Erwin, 3,848,214.
Chastan-Bagnis, Lucien. Scoop for collecting a layer of polluting material on water surfaces. 3,847,815, Cl. 210-242.000.
Chemagro Corporation: *See—*
Epstein, Peter F., 3,847,947.
Chemische Fabrik Pfersee GmbH: *See—*
Bernheim, Willy; and Deiner, Hans, 3,848,022.
Chen, Hsin S.; and Jones, Charles, to Curtiss-Wright Corporation. Self-starter system for single rotor expansion engine. 3,847,514, Cl. 418-15.000.
Chernyavsky, Vladimir Pavlovich: *See—*
Shapiro, Aron Beniaminovich; Chernyavsky, Vladimir Pavlovich; and Kadi-Ogly, Ibragim Akhmedovich, 3,848,149.
Chester, Arnold: *See—*
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Chevron Research Company: *See—*
Kohn, Gustave K.; and Brown, Melancthon S., 3,847,951.
Chiba, Kiyoshi: *See—*
Sobajima, Shigenobu; Takagi, Norio; and Chiba, Kiyoshi, 3,847,659.
Chisholm, Douglas S., to Dow Chemical Company, The. Method for the preparation of multilayer optical filters. 3,847,585, Cl. 65-99.00a.
Chisholm, James P.: *See—*
Gurley, Derrell G.; and Chisholm, James P., 3,847,413.
Chollet, Pierre: *See—*
Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, 3,847,556.
Christian, Rioux; and Francoise, Damidau, to Agence Nationale de Valorisation de la Recherche (Anvar). Circuit breakers for heavy currents. 3,848,099, Cl. 200-61.08r.
Christiansen, Palle Hein: *See—*
Holt, Jorgen; Videmark, Christian; and Christiansen, Palle Hein, 3,847,065.
Chromalytics Corporation: *See—*
Paul, Donald G., 3,847,546.
Churchill Instrument Company Limited: *See—*
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Ciba-Geigy AG: *See—*
Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.
Hubele, Adolf, 3,847,590.
Janiak, Stefan; and Rohr, Otto, 3,847,932.
Ciba-Geigy Corporation: *See—*
Randell, Donald Richard; and Smith, Malcolm John, 3,847,930.
Cihon, John A.; and Ehmann, Donald W., to MWA Company. Vitrified abrasive element. 3,847,568, Cl. 51-295.000.
Cincinnati Milacron Inc.: *See—*
Harper, Robert Charles, 3,848,037.
Claassen, George R.: *See—*
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Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., to Continental Oil Company. Overbased high plus low molecular weight sulfonate waterflood additive. 3,847,823, Cl. 252-8.55d.
Clark, Milton B.: *See—*
Kordesch, Karl V.; and Clark, Milton B., 3,847,673.
Clark, Richard L.: *See—*
Semprevivo, Ralph; Andrews, Donald W.; Clark, Richard L.; and French, David W., 3,847,418.
Clarke, Richard N.: *See—*
Jonke, Joseph L.; and Clarke, Richard N., 3,848,180.
Clarke, Robert E. Combination of a knife and sharpener. 3,846,909, Cl. 30-138.000.
Clasen, Richard Howard; and Giglia, Robert Domenico, to American Cyanamid Company. Ammonia-treated electrochromic (EC) electrodes. 3,847,468, Cl. 350-160.00r.
Clayson N.V.: *See—*
De Coene, Frans J. G. C.; and Muijs, Cornelis G. M., 3,847,160.
Clement, Ralph C., to I-T-E Imperial Corporation. Panelboard with provision for optional use with main breaker or main lugs with spaced insulators supporting main bus bars. 3,848,161, Cl. 317-119.000.
Clover, Richmond B., Jr., to Hewlett-Packard Company. Magnetic bubble propagation. 3,848,239, Cl. 340-174.0tf.
Coach and Car Equipment Corporation: *See—*
Harder, Arthur J., Jr., 3,847,452.
Coalson, John P. Drill bit. 3,847,236, Cl. 175-383.000.
Coats, John H.: *See—*
Argoudelis, Alexander D.; and Coats, John H., 3,847,746.
Cogar Corporation: *See—*
Titus, Robert J.; and Kelly, William J., 3,848,155.
Cohen, Milton J. Bag-type fluid and paste dispenser. 3,847,304, Cl. 222-105.000.
Coker, Charles Walter, Jr.: *See—*
Allmon, Dwight George; Lee, Pedro; and Coker, Charles Walter, Jr., 3,848,251.
Cole, Clinton W., to Halliburton Company. Hydraulically powered triplex pump and control system therefor. 3,847,511, Cl. 417-442.000.
Cole, Gordon E., Jr.: *See—*
Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., 3,847,654.
Cole, Howard W., Jr. Cyclone separator with foam supply. 3,847,571, Cl. 55-87.000.
Colgate-Palmolive Company: *See—*
Brandl, Eugene H.; and McHugh, Neil M., 3,847,622.
Drukker, Alexander E.; and Judd, Claude I., 3,847,904.
Fischer, Charles F., 3,847,527.
Suh, John T.; and Bare, Thomas M., 3,847,950.
Collins Radio Company: *See—*
Guillot, Joseph M. Jr., 3,848,078.
Collura, Peter C.; and Kipp, Michael Allen, to Container Corporation of America. Display carton. 3,847,282, Cl. 206-491.000.
Colson, Ralph E. Shrimp washers. 3,847,169, Cl. 134-183.000.
Colucci, Ivo, to Alfa Romeo S.p.A. Headlamp for motor vehicles. 3,848,121, Cl. 240-41.600.
Columbia Broadcasting System, Inc.: *See—*
Chaffee, William H.; Rubio, Alfred M.; and Lorenz, Richard L., 3,846,888.
Columbia Marking Tools, Inc.: *See—*
Krembel, Frank, Jr., 3,847,078.
Columbia Ribbon & Carbon Manufacturing Co., Inc.: *See—*
De Laurentis, Peter; and Newman, Douglas A., 3,847,645.
Columbus McKinnon Corporation: *See—*
Schreyer, Kenneth D., 3,846,978.
Comas, Jorge Rectoret. Mechanism for actuating pattern or control drums in knitting machines, and knitting machines incorporating the same. 3,846,996, Cl. 66-50.00b.
Combs, Charles S.: *See—*
Stephens, William D.; Willis, T. Chade; and Combs, Charles S., 3,847,871.
Combustion Engineering, Inc.: *See—*
Bevilacqua, Frank, 3,847,736.
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Cominco Ltd.: *See—*
Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, 3,847,595.
Commissariat a l'Energie Atomique: *See—*
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Compagnie Industrielle des Telecommunications Cit-Alcatel: *See—*
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Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, to Henkel & Cie GmbH. Method for the production of water-permeable porous concrete. 3,847,630, Cl. 106-90.000.
Condo, Albert C.: *See—*
Burt, Glenn R.; Condo, Albert C.; and Knight, George R., 3,846,989.

Confer, James O.; and McTaggart, George D., to Corning Glass Works. Apparatus and method for forming slip cast bodies with cavities. 3,848,040, Cl. 264-86.000.

Connell, Gordon Sidney, to Formflo Limited. Forming rolls. 3,846,999, Cl. 72-68.000.

Conrad, Bernd: *See—*
Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.

Container Corporation of America: *See—*
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Continental Can Company, Inc.: *See—*
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Continental Oil Company: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.
Fonseca, Anthony G., 3,848,056.

Cooksey, William Harold, to Lucas, Joseph, (Industries) Limited. Vacuum operable units for ignition distributors. 3,847,063, Cl. 92-100.000.

Cooper, Martin H., to United States of America, Atomic Energy Commission. Method of and filter for removing tritium from inert gases. 3,848,067, Cl. 423-248.000.

Copeland, Claud L. Steering mechanism for self-propelled vehicles. 3,847,239, Cl. 180-5.00r.

Coppier, Pierre: *See—*
Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, 3,847,776.

Corigliano, Rose. Reversible multi-purpose article carrier. 3,847,194, Cl. 150-28.000.

Corning Glass Works: *See—*
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Confer, James O.; and McTaggart, George D., 3,848,040.
Rice, Dale W., 3,848,068.
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Corns, Joseph B.: *See—*
Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.

Corwin, Howard R.: *See—*
Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.

Cosham, Michael A.; and Marx, Dieter O., to Microsystems International Limited. Dual-in-line package extraction tool. 3,846,895, Cl. 29-203.00h.

Cosyns, Jean, to Institut Francais de Petrole, des Carburants et Lubrifiants. Process for manufacturing a catalyst, the resulting catalyst and its use in a process for hydrogenating hydrocarbons. 3,847,835, Cl. 252-439.000.

Cotey, John; and Poirier, Jean R., to Medspecs, Inc. Speculum. 3,847,143, Cl. 128-17.000.

Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, to Rhone-Poulenc S.A. Pharmacologically active 3-piperazinyl-carbonyloxy-2-pyridyl-isoindolin-1-ones. 3,847,921, Cl. 260-268.0bc.

Coulter, Michael Oliver; and Bell, David, to PB Chemicals Limited. Mercury recovery process. 3,847,598, Cl. 75-121.000.

Cox, Delbert L., to Butler Manufacturing Company. Ensilage loader with automatically positioned cutter reel. 3,847,266, Cl. 198-9.000.

CPC International, Inc.: *See—*
Heady, Robert E.; and Jacaway, William A., Jr., 3,847,740.
Heady, Robert E.; and Jacaway, William A., Jr., 3,847,741.

Craven, Donald: *See—*
Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.

Craven, George Frederick; and Hockham, George Alfred, to International Standard Electric Corporation. Waveguide antenna. 3,848,256, Cl. 343-768.000.

Crawford, Jay D.: *See—*
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Creative Building Systems: *See—*
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Creger, Paul L.; and Neuklis, Winifred A., to Parke, Davis & Company. 2,2-Dimethyl-5-(aryloxy)-valeraldehydes. 3,847,994, Cl. 260-600.000.

Cricchio, Renato, to Gruppo Lepetit S.p.A. Alkenyl substituted rifamcyin SV compounds. 3,847,901, Cl. 260-239.30p.

Crimmel, Harry W.; Terezakis, Emanuel G.; and Sutula, Phyllis A., to Owens-Corning Fiberglas Corporation. Fast coloring of glass fibers and glass fabrics. 3,847,655, Cl. 117-126.0gq.

Criner, Joseph C., to Kyle Incorporated. Bell wire expander. 3,847,005, Cl. 72-393.000.

Cronin, Timothy H., to Pfizer, Inc. Labile esters of alpha-isocyanobenzylpenicillin as chemical intermediates. 3,847,900, Cl. 260-239.100.

Crowley, Richard P. Tufted carpet with gas-expandable pile and method. 3,847,719, Cl. 161-65.000.

Crown Zellerbach Corporation: *See—*
Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., 3,848,027.

Csepeli Szerszamgepgyar: *See—*
Toth, Ivan, 3,847,033.

Culley, Donnell H., Jr. Sander with improved feed mechanism. 3,847,271, Cl. 198-168.000.

Currat, Emile, to Etampes et Mecanique L. Serafini. Wristlet at least partially made of elements articulated to each other. 3,846,977, Cl. 59-80.000.

Currell, Herbert Henry, to Bond North Limited. Pile fabrics and methods and apparatus for the production. 3,847,691, Cl. 156-72.000.

Currey, John B.: *See—*
Cahoon, John B., Jr.; Currey, John B.; and Emig, Donald L., 3,847,535.

Curtiss-Wright Corporation: *See—*
Chen, Hsin S.; and Jones, Charles, 3,847,514.
Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.

Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T.; deceased (by Edwards, Katherine S.; legal representative), to Mobil Oil Corporation. Wax emulsions for controlling transpiration in plants. 3,847,641, Cl. 117-3.000.

Cushman, Walton W. Therapeutic apparatus and method. 3,847,146, Cl. 128-75.000.

Cushman, Walton W. Well and pipeline construction. 3,847,214, Cl. 166-.500.

Cusimano, Richard J.: *See—*
Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., 3,847,345.

CV Industries, Inc.: *See—*
Horwinski, Elwood R., 3,847,392.

Cymbalisty, Lubomyr M. O., 30% to Canada-Cities Service Ltd., 30% to Atlantic Richfield Canada Ltd. and 10% to Gulf Oil Canada Limited. Two stage separation system. 3,847,789, Cl. 208-11.000.

Dahlgren, Harold P. Method of printing sheets. 3,847,079, Cl. 101-426.000.

Dai Nippon Toryo Co., Ltd.: *See—*
Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,847,851.

Daida Keor Kabushiki Kaisha: *See—*
Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.

Dainippon Ink and Chemicals, Inc.: *See—*
Murakami, Yoichi; and Watanabe, Hikaru, 3,847,874.

Dalal, Ajay P.; Elarde, Paul F.; and Klasek, Frank A., to Western Electric Company Incorporated. Method of forming a magnet pattern on magnetic memory circuit cards. 3,847,700, Cl. 156-252.000.

D'Alessandro, Alfred C.; and May, Edwin A., to International Paper Company. Liquid dispensing device. 3,847,151, Cl. 128-269.000.

Dallen, John A., to Standard Products Company, The. Glazing system. 3,846,948, Cl. 52-400.000.

Danly Machine Corporation: *See—*
Heiberger, Francis E., 3,848,165.
Wiersma, Henry R., 3,847,009.

Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, to Knapsack Aktiengesellschaft. Thermostabilizers. 3,847,843, Cl. 260-2.5bb.

Darmara, Falih N.: *See—*
Soykan, Ferhun H.; Huntington, John S.; and Darmara, Falih N., 3,847,205.

Darrah, Arthur F.: *See—*
Quinlan, Joseph B.; and Darrah, Arthur F., 3,847,081.

Dasi Industries, Inc.: *See—*
Davies, Elmer S.; and Edwards, Monte R., 3,847,714.

Datacq Systems Corporation: *See—*
Higgins, Leonard James, 3,847,262.

Daubenspeck, John M.; and Jett, Bernard Holton, to N L Industries, Inc. Titanium pigment slurries for preparation of latex-base coating compositions. 3,847,640, Cl. 106-300.000.

Daunheimer, Lyn R.; and Irvine, William M., to Masonite Corporation. Method of making decorative panels. 3,847,646, Cl. 117-37.00r.

Davenport, Gordon Leroy. Dual wheel remover. 3,847,294, Cl. 214-332.000.

Davidsohn, Uryon S.; deceased (by Ajamie, Amil J.; administrator), to Motorola, Inc. Methods of forming self aligned transistor structure having polycrystalline contacts. 3,847,687, Cl. 148-187.000.

Davies, Elmer S.; and Edwards, Monte R., to Dasi Industries, Inc. Method and apparatus for heat treating liqueform materials. 3,847,714, Cl. 159-417.000.

Davis, Robert E.: *See—*
Thorn, Herbert; and Davis, Robert E., 3,846,934.

Davis, Robert T., to True Temper Corporation. Shear bumper. 3,846,910, Cl. 30-271.000.

Dawson, Carlyle Steven; and Hardman, Dorsey Lorraine, to General Electric Company. Encapsulated coil assembly. 3,848,208, Cl. 336-96.000.

Dawson, Thomas Larry, to Union Carbide Corporation. Water-borne latices. 3,847,855, Cl. 260-23.70a.

Dayco Corporation: *See—*
Ray, Robert L., 3,847,029.

Dazey Products Co.: *See—*
McNair, Samuel L., 3,846,848.

Dazey Products Company: *See—*
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De Bell & Richardson, Inc.: *See—*
White, Roy A.; and Margosiak, Stanley A., 3,847,852.

De Bie, Leo Pierre: *See—*
Hofman, Emiel Alexander; De Bie, Leo Pierre; and Berendsen, Jules Robert, 3,847,618.

De Coene, Frans J. G. C.; and Muijs, Cornelis G. M., to Clayson N.V. Cleaning device shielding means in combine harvesters. 3,847,160, Cl. 130-27.00t.

De Laurentis, Peter; and Newman, Douglas A., to Columbia Ribbon & Carbon Manufacturing Co., Inc. Thermographic copy sheets and process. 3,847,645, Cl. 117-36.900.

De Luccia, John J.: *See*—
Trabocco, Ronald E.; and De Luccia, John J., 3,847,558.

De Vlieg, Garrett H.: *See*—
Bissell, Sherman M.; De Vlieg, Garrett H.; and Hopland, Johan N., 3,847,445.

De Winter, Marinus. Method of on site building. 3,846,952, Cl. 52-743.000.

DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, to RCA Corporation. Microwave transmission line and devices using multiple coplanar conductors. 3,848,198, Cl. 330-56.000.

Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, to Eltro GmbH & Co. Indirect binocular ophthalmoscope. 3,847,470, Cl. 351-6.000.

Deering Milliken Research Corporation: *See*—
Carroll, Clifford C., 3,847,543.

Deeter, Richard W. Wood chair seat drilling machine. 3,847,500, Cl. 408-52.000.

DeForest, Elbert M.; St. Cyr, Lewis A.; and Young, Loren H., to Vulcan Materials Company. Process for the preparation of stannic chloride. 3,848,052, Cl. 423-96.000.

Deindoerfer, Fred H.: *See*—
Brake, Jon M.; and Deindoerfer, Fred H., 3,847,738.

Deiner, Hans: *See*—
Bernheim, Willy; and Deiner, Hans, 3,848,022.

Del Pico, Joseph, to Abcor, Inc. Process of treating wool-scouring liquor and centrifuge effluent. 3,847,804, Cl. 210-23.000.

Delgendre, Jacques Claude; Kerrenneur, Alain Rogar; and Berton, Georges Albert, to Etat Francais. Process and apparatus for detecting of the presence of a liquid. 3,847,547, Cl. 23-230.001.

Delle-Alsthom: *See*—
Thuries, Edmond, 3,848,103.

DeLuca, Hector F., to Wisconsin Alumni Research Foundation. 1,24,25-Trihydroxycholecalciferol. 3,847,955, Cl. 260-397.200.

Delzenne, Gerard Albert: *See*—
Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.

Demarest, Donald M., to General Electric Company. Starting inhibit scheme for an HVDC converter. 3,848,175, Cl. 321-11.000.

Dench, Edward C., to Raytheon Company. Drying expanded plastic with microwave energy. 3,848,038, Cl. 264-51.000.

Dennis, Kent S., to Dow Chemical Company, The. Stabilized complexes of alkali metal and organic compound and method for their preparation. 3,847,834, Cl. 252-431.00r.

Denzel, Theodor; and Hoehn, Hans, to Squibb, E. R., & Sons, Inc. Hydroxy or alkoxy derivatives of 5-halo-1H-pyrazolo(3,4-b)pyridines. 3,847,929, Cl. 260-296.00h.

DePalma, Ted V., to Universal Oil Products Company. Catalytic treatment of recycle gases for an internal combustion engine. 3,846,980, Cl. 60-279.000.

Dershem, Thomas L.; and Renn, Charles F., to General Motors Corporation. Heated molten metal pouring ladle. 3,848,072, Cl. 13-20.000.

Desai, Dinesh Maganlal: *See*—
Somasekhara, Shankar; and Desai, Dinesh Maganlal, 3,847,912.

Desnoyers, Pierre: *See*—
Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.

Dessauer, Rolf; and Ellefson, John R., to Du Pont de Nemours, E. I., and Company. Photodecorating sheet material with matched colored designs. 3,847,608, Cl. 96-27.00r.

Deutsch Fastener Corporation: *See*—
Gulistan, Bulent, 3,847,422.

Deutsche Gold- und Silber-Scheideanstalt vormals Roessler: *See*—
Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.

Deutsche Texaco Aktiengesellschaft: *See*—
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DeWiant Corporation: *See*—
Reznik, Barry David, 3,847,559.

Dhein, Rolf: *See*—
Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, 3,847,877.

Di Perna, James. Pollution suction water sweeper. 3,847,816, Cl. 210-242.000.

Diaz, Arthur F.: *See*—
Guth, Eugene Daniel; and Diaz, Arthur F., 3,847,800.

Dichiro, Anthony: *See*—
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Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, to Bayer Aktiengesellschaft. 4-Amino-1,2,4-triazine-5-one, and a process for their production. 3,847,914, Cl. 260-248.0as.

Dierker, Joachim: *See*—
Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, 3,847,696.

Dietsche, Wolfram: *See*—
Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.

Digrasso, Leonard: *See*—
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Dimeler, Glenn R.: *See*—
Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., 3,847,623.

Dinse, Wilhelm. Single-pole electrical plug connection for shielded arc welding apparatus. 3,847,287, Cl. 219-130.000.

Dinsmore, Robert L.; and Ivey, Herbert D., to Lubrication Company of America. Cyclic sulfur-chlorinated oil and process of making. 3,847,827, Cl. 252-48.800.

Dion, Donald Francis: *See*—
Logemann, Hugo, Jr.; and Dion, Donald Francis, 3,847,394.

Dislich, Helmut; Hinz, Paul; and Kaufmann, Reinhard, to Jenaer Glaswerk Schott & Gen. Process for the manufacture of multi-component substances. 3,847,583, Cl. 65-33.000.

Display Corporation International: *See*—
Kleppin, Roland P., 3,847,457.

Divan, William J., to Cashin Systems Corporation. Apparatus for weighing and segregating sliced bacon from a slicing machine. 3,846,957, Cl. 53-59.00w.

Divan, William J., to Cashin Systems Corporation. Apparatus for weighing and segregating sliced bacon from a slicing machine. 3,846,958, Cl. 53-59.00w.

Dixon, John Allen, to Weyerhaeuser Company. Pneumatic sheet conveyor. 3,847,390, Cl. 271-195.000.

Dobson, Austin: *See*—
Peacock, George Brandwood; and Dobson, Austin, 3,846,966.

Doering, George I., to Industrial Nucleonics Corporation. Peak responsive control system and method. 3,847,730, Cl. 162-198.000.

Dolch, Volker, to Scanner, Inc. Data field recognition and reading method and system. 3,847,346, Cl. 235-61.11e.

Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek. Novel N-(oxidoalkyl) anilines. 3,847,907, Cl. 260-240.00h.

Donaldson Company, Inc.: *See*—
Firth, Robert L., 3,847,819.

Doney, Sharon Chilcote. Dollar sign bank. 3,847,277, Cl. 206-.840.

Dooley, Ronald M.; and Haas, John W., to Tri-State Hospital Supply Corporation. Two-piece bedpan. 3,846,849, Cl. 4-112.000.

Doris, C. G., (Compagnie Generale pour les Development Operationnels des Richesses Sous Marines): *See*—
Lamy, Jacques Edouard, 3,846,988.

Dorsch, Robert E., to Uniroyal, Inc. Doily for reinforcing the wall of a flexible walled liquid container. 3,847,716, Cl. 161-35.000.

Dorsey, Denis Peter: *See*—
Rodda, William E.; and Dorsey, Denis Peter, 3,848,084.

Doss, David, to Textron Inc. Crystal controlled watch. 3,846,972, Cl. 58-23.00r.

Doty, John Trimble. Drill and tap attachment for pipe clamps. 3,847,501, Cl. 408-108.000.

Double A Products Co.: *See*—
Loup, Ronald L., 3,847,176.

Dougherty, Edward F.: *See*—
Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., 3,848,003.

Douri, Hisashi, to Yoshida Kogyo Kabushiki Kaisha. Slider assembling device for slide fastener chain. 3,846,897, Cl. 29-207.5sl.

Dover Corporation: *See*—
Jarman, Ronald D., 3,847,817.

Dow Chemical Company, The: *See*—
Behr, Raymond D., 3,848,035.
Bockstahler, Earl R., 3,847,986.
Chisholm, Douglas S., 3,847,585.
Dennis, Kent S., 3,847,834.
Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., 3,847,927.
Eilers, Louis H.; and Parks, Christ F., 3,847,858.
Gurley, Derrell G.; and Chisholm, James P., 3,847,413.
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Dow Corning Corporation: *See*—
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Dowa Mining Co., Ltd., The: *See*—
Sekine, Kunio; Kamata, Yukio; and Yamaishi, Yoshio, 3,847,779.

Doyle, Frank B. Radiant heat absorber. 3,847,174, Cl. 137-334.000.

Draber, Wilfried: *See*—
Dickore, Karlfried; Draber, Wilfried; and Eue, Ludwig, 3,847,914.

Draggett, Henry A., to Ajax Flexible Coupling Co., Inc. Machine to cut the ends off onions or the like. 3,847,070, Cl. 99-643.000.

Drake, Cyril Francis; and Amos, Robert Walter James, to International Standard Electric Corporation. Lead free glass composition. 3,847,625, Cl. 106-52.000.

Drano Corporation: *See*—
Briggs, Aubrey C., 3,847,270.

Draugelis, Vaidevutis C.; Reese, Franklin S.; and Wagner, John W., to Xerox Corporation. Pressure adjustable electrophotographic printing machine transfer apparatus. 3,848,204, Cl. 355-3.00r.

Drawert, Manfred; and Griebsch, Eugen, to Schering AG. Polyamides from heptadecane dicarboxylic acid and heterocyclic polyamine. 3,847,875, Cl. 260-78.00r.

Drebinger, Klaus; and Thilo, Peer, to Siemens Aktiengesellschaft. Method for locating vehicles. 3,848,254, Cl. 343-112.00r.

Dreier-Saner, Urs: *See*—
Stich, Ernest, 3,847,213.

Dreisin, Alexander, to Allis-Chalmers Corporation. Injection timing modulator. 3,847,126, Cl. 123-140.00r.

Drukker, Alexander E.; and Judd, Claude I., to Colgate-Palmolive Company. Method of preparing 5,6-dihydro-11-morphanthridones. 3,847,904, Cl. 260-239.00d.

Du Pont de Nemours, E. I., and Company: *See*—
Amin, Rajnikant Babubhai, 3,848,079.
Bakermans, Fransiscus Cornelius; and Thoms, William Charles, 3,846,896.
Bouchard, Robert J., 3,847,829.
Dessauer, Rolf; and Ellefson, John R., 3,847,608.
Duggins, Ray B., 3,847,865.
Heckrotte, Robert Sherwood; and Scott, John Alexander, 3,847,522.
Kegelman, Matthew Roland, 3,847,674.
Mattis, Weat Carl, 3,846,955.
McKay, Jerry Bruce, 3,846,969.
Orvis, Gary W., 3,847,847.
Pedersen, Charles John; and Bromels, Marilyn H., 3,847,949.
Shook, Howard E., Jr.; and Thompson, John B., 3,847,959.

Duell, Norman Leroy, to Societe d'Assistance Technique Pour Products Nestle S.A. Identification device on a conveyor band. 3,847,268, Cl. 198-40.000.

Dugan, John J.: *See*—
Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., 3,847,797.

Duggins, Ray B., to Du Pont de Nemours, E. I., and Company. Use of alumina trihydrate in a polymethyl methacrylate article. 3,847,865, Cl. 260-42.520.

Duhault, Jacques: *See*—
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Duke University, Inc.: *See*—
Smith, Ralph E.; and Kozoman, Frank E., 3,847,749.

Dumas, Guy H., to Silec-Semi-Conducteurs. Static relays synchronized on the passage to zero. 3,848,158, Cl. 317-11.00a.

Dumont, Georges: *See*—
Taeymans, Alois; Dumont, Georges; and Balleux, Willem, 3,847,094.

Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., to Dow Chemical Company, The. Sulfur-containing hydroxypyridones. 3,847,927, Cl. 260-294.80f.

Dundon, John Peter, to American Cyanamid Company. Purification of beta-naphthol by extractive crystallization. 3,848,001, Cl. 260-62.00b.

Dunlop Limited: *See*—
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Dunn, Elman R., to Litton Industries, Inc. Double disc grinder. 3,846,940, Cl. 51-118.000.

Dunn, Horton, Jr.: *See*—
Lesuer, William Monroe; and Dunn, Horton, Jr., 3,848,032.

Dunn, Howard J.; and Farr, M. Paul, to Ralston Purina Company. Microcrystallin chitin. 3,847,897, Cl. 260-211.00r.

Duo-Mode Electric Transport System, Inc.: *See*—
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Duong, Claudy: *See*—
Bourdon, Bernard; Duong, Claudy; and Coppier, Pierre, 3,847,776.

DuPree, Louis E., Jr.: *See*—
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Duriron Company, Inc., The: *See*—
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Durland, Douglas H.: *See*—
Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, 3,847,484.

Durmann, George J.: *See*—
Patrick, John; and Durmann, George J., 3,847,337.

Dusch, Albert; and Hintzen, Peter, to PFAFF Industriemashienen G.m.b.H. Device for making braid openings in cutout pieces of garments. 3,847,097, Cl. 112-68.000.

Dworak, Wilhelm; and Talmon, Wolfgang, to Bosch, Robert, G.m.b.H. Gear pump arrangement. 3,847,519, Cl. 418-126.000.

Dynamit Nobel Aktiengesellschaft: *See*—
Seiler, Claus-Dieter; Vahlensieok, Hans-Joachim; and Junger, Hans, 3,847,860.

Eastern Cyclone Industries, Inc.: *See*—
Boon, Bruce Theodore Edward, 3,847,293.

Eastham, Jerome F.: *See*—
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Brandon, Kenneth F.; and Perconti, Thomas J., 3,847,319.
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Statman, Max; and Page, Ralph E., Jr., 3,847,756.

Eastman-Kodak Company: *See*—
Hoffman, Edward P., 3,847,516.

Eastty, Peter Charles, to Electronic Music Studios (London) Limited. Interpolators. 3,847,349, Cl. 235-152.000.

Eberhard, Elmer T.; and Meier, Henry G., to I-T-E Imperial Corporation. Elongated jaw contact for oil circuit breaker disconnect contact. 3,848,101, Cl. 200-150.00r.

Eberle Werke KG: *See*—
Schwarm, Hans, 3,848,212.

Eckels, Robert E. Remote rock breaking method apparatus therefor. 3,847,080, Cl. 102-27.00r.

Ecodyne Corporation: *See*—
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Edeleanu Gesellschaft mbH: *See*—
Putz, Joachim, 3,847,790.

Edstrom, Nils Herbert, to Telefonaktiebolaget LM Ericsson. Apparatus and method for increasing the transmission capacity of a time division synchronous satellite telecommunication system. 3,848,093, Cl. 179-15.0as.

Edwards, Katherine S.: *See*—
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Edwards, Monte R.: *See*—
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Edwards, Roy T.: *See*—
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Ehret, Jenson E.: *See*—
Szendroi, Imre; and Ehret, Jenson E., 3,847,303.

Ehretsmann, Jacques; Barbey, Emile; and Heinzer, Paul, to Battelle Memorial Institute. Ink ribbon having an anisotropic electric conductivity. 3,847,265, Cl. 197-172.000.

Eilers, Louis H.; and Parks, Christ F., to Dow Chemical Company, The. Cementitious compositions and methods. 3,847,858, Cl. 260-33.20r.

Eisai Co., Ltd.: *See*—
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Tanaka, Satoru; and Hashimoto, Kazunori, 3,847,924.

Eisenstadt, Daniel J.: *See*—
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Eisner, Steve, to Norton Company. Bi-polar acrivating particles for electrodeposition process. 3,847,660, Cl. 117-212.000.

Ekemar, Karl Sven Gustave: *See*—
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Ekholm, Tommy Ludvig Wilhelm: *See*—
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Electromedia, Inc.: *See*—
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Electronic Music Studios (London) Limited: *See*—
Eastty, Peter Charles, 3,847,349.

Elg, Carl L., Apparatus for removing flanged cup bearings from heavy duty universal joints. 3,846,891, Cl. 29-201.00r.

Ellefson, John R.: *See*—
Dessauer, Rolf; and Ellefson, John R., 3,847,608.

Elliott, Delbert R.: *See*—
Needham, James M.; and Elliott, Delbert R., 3,847,447.

Ellis, Jack, to Young, Sidney Geoffrey. Handling of radio-active sources. 3,848,137, Cl. 250-497.000.

Ellis, Kenneth Harold: *See*—
Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.

Elpern, Barry S.: *See*—
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Elsten, Walter: *See*—
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Eltro GmbH & Co: *See*—
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EMI Limited: *See*—
Forse, David Patrick Searle, 3,847,466.

Emig, Donald L.: *See*—
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Eminian, Giancarlo: *See*—
Ramacciotti, Aldo; and Eminian, Giancarlo, 3,847,593.

Endo, Ichiro; and Yamanouchi, Teruo, to Canon Kabushiki Kaisha. Organic photoconductors sensitized by free radical liberators and organometallic compounds. 3,847,607, Cl. 96-1.600.

Energy Sciences Inc.: *See*—
Quintal, Bertram S.; and Maynard, Derek J., 3,848,153.

Engelhard, Helmut; Blankenstein, Gunter; and Reinehr, Ulrich, to Bayer Aktiengesellschaft. Permanently antistatic acrylonitrile polymers containing a mercapto polyether. 3,848,028, Cl. 260-898.000.

Engelhard Minerals & Chemicals Corporation: *See*—
Pfefferle, William C., 3,846,979.

Engelsher, Harvey J., to Horizon Industries, Ltd. Tube servicing device. 3,847,370, Cl. 251-6.000.

Englert, Robert D.; and Berriman, Lester P., to Koratron Company, Inc. Process of curing chemically treated cellulosic fabric. 3,846,845, Cl. 2-243.00r.

Engvall, Arthur E.: *See—*
Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., 3,847,690.
Enviro-Gro, Inc.: *See—*
Meyers, Edward F., 3,846,954.
Epstein, Peter F., to Chemagro Corporation. Quaternary thenyl phosphonium salts. 3,847,947, Cl. 260-332.500.
Erhardt & Leimer KG, Firma: *See—*
Zerle, Ludiw; and Scharm, Klaus, 3,848,184.
Erhardt, Peter Franklin; and Wiehe, Irwin Andrew, to Xerox Corporation. Imaging by phase aggregation from block copolymers. 3,847,644, Cl. 117-36.700.
Erickson, John W.: *See—*
Brown, Francis Barton; and Erickson, John W., 3,847,512.
Erickson, John W.; and Budrys, Vitolis, to Kobe, Inc. Centrifugal separator. 3,847,327, Cl. 233-32.000.
Erickson, Thomas D.; and Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Glass compositions, fibers and methods of making same. 3,847,626, Cl. 106-50.000.
Erickson, Thomas D.; and Wolf, Warren W., to Owens-Corning Fiberglas Corporation. Glass composition, fibers and methods of making same. 3,847,627, Cl. 106-50.000.
Erickson, Wayne K., to Phillips Petroleum Company. Filament crimping. 3,846,881, Cl. 28-72.140.
Erneta, Modesto, to N L Industries, Inc. Inorganic microperes by a double emulsion technique. 3,848,059, Cl. 423-327.000.
Errett, Carl G. Apparatus for adjusting fuel delivery in diesel injectors. 3,847,011, Cl. 72-477.000.
ESB Incorporated: *See—*
Werth, John J., 3,847,667.
Eschbaugh, John T.; and Mooney, David N., to Parker-Hannifin Corporation. Quick connect tube coupling joint. 3,847,421, Cl. 285-353.000.
Escher Wyss Aktiengesellschaft: *See—*
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Eshelman, Cheston Lee. Shiftable shock absorbing tire buffer. 3,847,427, Cl. 293-19.000.
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Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.
Etter, Marcel. Control circuit for an inverter with a variable output voltage and frequency. 3,848,176, Cl. 321-18.000.
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Evans, Howard J.: *See—*
Utt, Orval L.; and Evans, Howard J., 3,848,125.
Evans, Joseph H., to Raychem Corporation. Heat recoverable articles and methods therefor. 3,847,721, Cl. 161-108.000.
Evans, Philip Henry, to Glenburn Engineering Limited. Record players. 3,847,400, Cl. 274-1.001.
Evans, Philip Henry, to Glenburn Engineering Limited. Record players. 3,847,401, Cl. 274-10.00r.
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Awiszus, Waldemar K., 3,847,133.
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Campbell, James F., Jr.; Engvall, Arthur E.; and Lewis, Arthur E., 3,847,690.
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Dunn, Howard J.; and Farr, M. Paul, 3,847,897.
Farrell, John J.; and Grazine, William, to Farrell Patent Company. Apparatus for clamping mold of injection molding machine. 3,847,529, Cl. 425-451.200.
Farrell, Lewis E. Apparatus for installing manhole rings. 3,847,339, Cl. 249-1.000.
Farrell Patent Company: *See—*
Farrell, John J.; and Grazine, William, 3,847,529.
Farrell, Robert E., to Improved Machinery Inc. Clamping force applying means for molding machines. 3,847,528, Cl. 425-450.100.
Farrington, Frederick: *See—*
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Feldmann, Fritz, to Pacific Technica Corporation. Spin stabilized, discarding sabot projectile. 3,847,082, Cl. 102-93.000.
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Fenne, Ivor, to C.A.V. Limited. Fuel pumps for internal combustion engines. 3,847,510, Cl. 417-293.000.
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Fieni, Walter, to Societe Anonyme Francaise du Ferodo. Safety belt reel with brake. 3,847,367, Cl. 242-107.400.
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Firth, Robert L., to Donaldson Company, Inc. Seal for fluid filter. 3,847,819, Cl. 210-444.000.

Fischel, Halbert; and Dichiro, Anthony, to Sub-Marine Systems Incorporated. Property interchange system for fluids. 3,847,211, Cl. 165-166.000.

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Fischer, Arthur. Hip joint prosthesis. 3,846,846, Cl. 3-1.000.

Fischer, Charles F., to Colgate-Palmolive Company. Plodder trimmer nozzle. 3,847,527, Cl. 425-308.000.

Fischer, Gerhard, to Gustav Schade Maschinenfabrik. Device for the removal of bulk material from round, cone-shaped piles. 3,847,289, Cl. 214-10.000.

Fischer, Udo: *See—*
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Fish, James F., to American Air Filter Company, Inc. Charcoal filter arrangement. 3,847,574, Cl. 55-387.000.

Fisher, Chester Donald: *See—*
Holmes, William S.; Fisher, Chester Donald; and Ihrig, Clifford D., 3,847,359.

Fisher, Donald J., to Xerox Corporation. Continuous blade cleaner. 3,847,480, Cl. 355-15.000.

Fisk, Pliny. Process for separating and converting waste into useable products. 3,847,803, Cl. 210-8.000.

Fitzgerald, Donald F.: *See—*
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Flam, Eric. Device for aid in detecting breast cancer. 3,847,139, Cl. 128-2.00h.

Fleming, Robert W.: *See—*
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Fletcher, Peter S. Reclining chair with movable headrest. 3,847,430, Cl. 297-61.000.

Flores, Edward: *See—*
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Flores, Edward; and Holmes, Thomas W., 15% each to Flores, Edward and Holmes, Thomas W. Pivoted closure for a beverage cup. 3,847,311, Cl. 222-473.000.

Florian, John, to Mobil Oil Corporation. Garment shaper. 3,847,314, Cl. 223-98.000.

FMC Corporation: *See—*
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Goodley, George F., 3,847,071.
Lemke, Arthur A., 3,847,802.
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Foderaro, Anthony J., to Picker Corporation. Patient rotator and method of conducting X-ray studies. 3,848,132, Cl. 250-437.000.

Foglio, Maurizio: *See—*
Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, 3,847,991.

Foll, Gerhard; and Lahm, Heinrich, to Index-Werke KG Hahn & Tessky. Tool support for use in machine tools particularly in turning machines. 3,846,880, Cl. 29-3.00g.

Fonken, Gunther S.: *See—*
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Fonseca, Anthony G., to Continental Oil Company. Molten alkaline alkanoic mixtures for absorption of sulfur oxides. 3,848,056, Cl. 423-210.500.

Fontaine, Louis: *See—*
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Foote Mineral Company: *See—*
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Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., to Crown Zellerbach Corporation. Method of preparing water-dispersible polyolefin fibers and product formed therefrom. 3,848,027, Cl. 260-897.00b.

Ford Motor Company: *See—*
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Ford, Sanders, Jr., to Social Dynamics Inc. Combustion improver. 3,847,565, Cl. 48-180.00s.

Forester, Glen Robert, to Phillips Cable Limited. Method and apparatus for twisting wires. 3,847,190, Cl. 140-149.000.

Forgione, Peter Salvatore, to American Cyanamid Company. Enzymes bound to carbonyl polymers. 3,847,743, Cl. 195-63.000.

Forlano, Luigi, to Solvay & Cie. Production of methylene chloride. 3,848,007, Cl. 260-662.00r.

Formflo Limited: *See—*
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Formitalia Societa Formaceutici Italia: *See—*
Bernardi, Luigi; Foglio, Maurizio; and Temperilli, Aldemio, 3,847,991.

Forsberg, Rolf Erik; and Sparr, Erik Einar, to AB Wikstrand & Berg. Standard or pole for supporting light fittings. 3,847,334, Cl. 248-158.000.

Forse, David Patrick Searle, to EMI Limited. Scanning arrangements. 3,847,466, Cl. 350-7.000.

Forthmann, Frederick F., Jr. Strip material packing apparatus. 3,846,960, Cl. 53-163.000.

Foster, Anthony, to Koppers Company, Inc. Refuse burner apparatus. 3,847,093, Cl. 110-8.00c.

Foster, Daniel S., to Gale, W. D., Inc. Air pump. 3,847,513, Cl. 417-571.000.

Foster Wheeler Corporation: *See—*
Godino, Rino L.; and Morfit, Oliver, 3,847,751.

Fouche, Michel. Device for automatically coupling and uncoupling the gondolas of a fun fair ride. 3,847,084, Cl. 104-20.000.

Fowler, Arthur G. Conveyer belt roller. 3,847,260, Cl. 193-37.000.

Fowler, John T.: *See—*
Perron, Robert R.; and Fowler, John T., 3,848,229.

Fox, Elmer E. Duct joining tool. 3,847,037, Cl. 81-5.10r.

Foye, John J., to Kaiser Aluminum & Chemical Corporation. Self-centering bottom block assembly. 3,847,206, Cl. 164-274.000.

Frackowiak, Anthony J.: *See—*
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Christian, Rioux; and Francoise, Damidau, 3,848,099.

Franklin, Ernest. Two piece double walled container. 3,847,494, Cl. 403-345.000.

Frantz, Robert Houston, to AMP Incorporated. Electrical connecting device for service outlet. 3,848,220, Cl. 339-32.00r.

Fraser, Robert W.: *See—*
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Frederickson, Robert Eugene, to McCulloch Corporation. Method of casting aluminum cylinder. 3,847,204, Cl. 164-132.000.

Freedy, Allan L.; and Risk, Norman E., to Caterpillar Tractor Company. Hydraulic fluid reservoir pressurization arrangement. 3,846,983, Cl. 60-478.000.

Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, to Caterpillar Tractor Company. Flat track shoe with tapered end ribs. 3,847,451, Cl. 305-54.000.

Freeman, Kenneth, to Audio Synthesisers Limited. Electronic organ with plural master oscillators and plural vibrato oscillators for each note. 3,847,050, Cl. 84-1.250.

Freeport Minerals Company: *See—*
Wiewiorowski, Tadeusz Karol, 3,848,054.

French, David W.: *See—*
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Fries, Bernd, to Ankerwerk Nurnberg GmbH. Material mixing moulding apparatus for use with a mould to shape a plastics material. 3,847,526, Cl. 425-245.00r.

Frost, C. L., & Son, Inc.: *See—*
Vandermeulen, Douglas J.; and Weis, Siegfried K., 3,847,455.

Frushour, George Victor; and Nafziger, Marvin Lee, to Lilliston Corporation. Peanut harvesting machine. 3,846,964, Cl. 56-16.600.

Fryklund, Linda; and Porath, Jerker Olof, to Exploratering Aktiebolaget T.B.F. Protein separation by insoluble, amphoteric ion exchangers. 3,847,889, Cl. 260-112.00r.

Fuchs, Werner: *See—*
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Fuji Photo Film Co., Ltd.: *See—*
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Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, to Nippon Kokan Kabushiki Kaisha, Shimadzu Seisakusho Ltd. and Shimadzu Metal Industries Ltd. X-ray examination system for examining the wided portions at both ends of steel pipes. 3,848,127, Cl. 250-321.000.

Fujimori, Noboru: *See—*
Nishina, Yoshio; Kono, Isao; Kamakura, Toshio; Nakamura, Hayashi; Fujimori, Noboru; and Sakamoto, Eiichi, 3,847,621.
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Fujisawa, Kiyoji: *See—*
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Fukuda, Masataro; Iwaki, Tsutomu; and Mitsumata, Tadayasu, to Agency of Industrial Science and Technology. Process for preparing a sintered iron negative plate for an alkaline storage battery. 3,847,603, Cl. 75-213.000.

Fulk, Walter F.; and Lyle, Phra D., to Owens-Corning Fiberglas Corporation. Method of and apparatus for processing linear elements. 3,847,579, Cl. 65-11.00w.

Fundell, Kjell Erik: *See—*
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Furr, Samuel T., to Bethlehem Steel Corporation. Helical steel spring and method. 3,847,678, Cl. 148-2.000.

Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., to Gordon, Sherritt, Mines Limited. Dispersion strengthened metals and alloys and process for producing same. 3,847,680, Cl. 148-11.50f.

Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., to Olin Corporation. Process for making fire-retardant polyurethane foam using crude 4,4,4-trichloro-1,2-epoxybutane. 3,847,844, Cl. 260-2.5as.

GAF Corporation: *See—*
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Galasso, Maurice: *See—*
Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, 3,847,484.

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Gamble, John G. Solid state keyboard switch. 3,848,216, Cl. 338-32.00h.

Gandrud, Stanton D. Dental office system. 3,847,573, Cl. 55-319.000.

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Gardner, John Nicholson; and Kochling, Josef, to Hoffmann-La Roche Inc. Preparation of triaryl phosphines. 3,847,999, Cl. 260-606.50p.

Gardner, Richard H., to Goodrich, B. F., Company, The. Parking brake. 3,847,254, Cl. 188-70.00r.

Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, to Ciba-Geigy AG. Process for curing hydantoin-containing polyacrylates with ionising radiation. 3,847,769, Cl. 204-159.220.

Garrett, Billy R. Holder for gasoline lantern. 3,847,286, Cl. 211-13.000.

Garrett Corporation, The: *See—*
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Garrick, John R.; and Waters, Ernest B., Jr., to Armstrong Cork Company. Method of making cut-in-register ceiling tile. 3,848,043, Cl. 264-134.000.

Garriott, Louis B., Jr.: *See—*
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Garrison, Harold Keith, to Hesston Corporation. Loose hay wagon. 3,847,072, Cl. 100-35.000.

Garron, Stephen A., to Singer Company, The. Pattern selection system for sewing machines. 3,847,100, Cl. 112-158.00e.

Gasseling, Franciscus Wilhelmus Engelbert: *See—*
Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, 3,846,985.

Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, to BP Chemicals International Limited. Process for preparing acrylonitrile by the ammoxidation of propylene using a metal oxide composition of antimony - tin - copper - iron and n additional metal. 3,847,965, Cl. 260-465.300.

Gatch, Richard E.: *See—*
Slosiarek, Michael L.; and Gatch, Richard E., 3,847,228.

Gates, F. Alan: *See—*
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Gautreaux, Gloria A.: *See—*
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Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.

Geffen, Hyman. Display writing instrument. 3,846,927, Cl. 40-334.000.

Geilhufe, Michael; and Mehta, Rustam Jehangir, to Advanced Memory Systems,. High speed MOS random access read/write memory device. 3,848,237, Cl. 340-173.00r.

Geisthoff, Hubert, to Walterscheid, Jean, GmbH. Device for connecting an agricultural implement, machine or the like to a tractor. 3,847,415, Cl. 280-478.00r.

Gem Industries, Inc.: *See—*
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Vincent, William R.; and Abu-Isa, Ismat A., 3,847,648.

General Tire & Rubber Company, The: *See—*
Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., 3,847,707.

Genova Products: *See—*
Pepper, Kenneth V., 3,846,851.

Genta, Guido, to American Aniline Products, Inc. 1,4-Diamino-2-alkylthiophenoxy-3-haloanthraquinone polyester dyes. 3,847,541, Cl. 8-39.000.

Genuist, Jean; and Le Parquier, Guy, to Thomson-CSF. Side looking pulse radar system. 3,848,253, Cl. 343-5.0cm.

Gerner, Heinz; and Merkel, Rudolf, to Werkzeugmaschinenfabrik Adolf Waldrich Coburg. Control for a lifting mechanism for a hydraulic copy device on machine tools. 3,846,941, Cl. 51-165.890.

Gerner, James; and Suhr, Peter J., to Magnetic Analysis Corporation. Apparatus for limiting phase-angle response range, particularly in eddy current testing apparatus. 3,848,182, Cl. 324-40.000.

Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, to Noranda Mines Limited. Screw machining material. 3,847,556, Cl. 29-187.000.

Geus, John W.: *See—*
Slot, Hendrik Bruins; and Geus, John W., 3,847,831.

Gevaert-Agfa N.V.: *See—*
Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.

Gewerkschaft Eisenhutte Westfalia: *See—*
Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.

Gewerkschaft Victor Chemische Werke, Firma: *See—*
Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, 3,848,061.

Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, to Industrie Pirelli S.p.A. Buoyant hose and method for making same. 3,847,693, Cl. 156-79.000.

Ghys, Theofiel Hubert: *See—*
Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.

Giacopelli, Umberto. Electolytic cell and method of assembling same. 3,847,783, Cl. 204-275.000.

Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, to Imperial Chemicals Industries Limited. Fermentation method and apparatus. 3,847,748, Cl. 195-109.000.

Gieschen, Kurt; and Schmidemann, Walter, to U.S. Philips Corporation. Film displacement device for X-ray apparatus. 3,848,134, Cl. 250-471.000.

Giger, Urs, to Eta A.G. Ebauches-Fabrik. Motor-barrel watch movement. 3,846,974, Cl. 58-87.000.

Giglia, Robert Domenico: *See—*
Clasen, Richard Howard; and Giglia, Robert Domenico, 3,847,468.

Giguere, Andre N.; and Thibodeau, Rheal A., to Giguere, Marie Marthe Poulin and Thibodeau, Rose Agathe Cote. Portable electric grill appliance. 3,848,110, Cl. 219-525.000.

Giguere, Marie Marthe Poulin: *See—*
Giguere, Andre N.; and Thibodeau, Rheal A., 3,848,110.

Gilbert Engineering Company, Inc.: *See—*
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Gilbert, Lyman Francis, to Combustion Engineering, Inc. Automatic bed level control for furnaces. 3,847,092, Cl. 110-7.00r.

Gillette Company, The: *See—*
Sastri, Aiyaswami Suryanarayan, 3,847,683.

Gillice, Leland O., to Alpha-O Corporation. System for etching ceramic surfaces and the like. 3,847,688, Cl. 156-2.000.

Gish, Duane T.: *See—*
Kelly, Robert C.; Wechter, William J.; and Gish, Duane T., 3,847,898.

Glaser, Helmut: *See—*
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Glaser, Rudolf: *See—*
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Glass, Marvin, & Associates: *See—*
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Glaze, Stanley George: *See—*

Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, 3,847,251.

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Gley, Paul R., to Rexnord, Inc. Dual spring action self adjusting latch. 3,847,423, Cl. 292-113.000.

Glover, Richard Warmath; Musch, Gordon Frederick; and Summa, John A., to Black and Decker Manufacturing Company, The. Trigger mechanism for hand-operated power device providing automatic lock-off and manual lock-on operation. 3,847,233, Cl. 173-170.000.

Gober, John L.: *See—*
Ficken, Charles L.; and Gober, John L., 3,847,340.

God, Andrew. Metal pipe with spaced flexible portions. 3,847,184, Cl. 138-120.000.

Godino, Rino L.; and Morfit, Oliver, to Foster Wheeler Corporation. Recovery and handling of asphalt containing a high concentration of asphaltene. 3,847,751, Cl. 196-155.000.

Godtfredsen, Wagn Ole, to Lovens Kemiske Fabrik Produktionsaktieselskab. Cephalosporanic acid esters. 3,847,913, Cl. 260-243.00c.

Goebel, Robert W.; and Marous, George R., to Robbins & Myers, Inc. Electric motor ventilation. 3,848,145, Cl. 310-60.000.

Gold, Elijah H., to Schering Corporation. Substituted imidates. 3,847,988, Cl. 260-566.00b.

Gollub, Seymour. Method and system for controlled automated administration of drugs to patients. 3,847,138, Cl. 128-1.100.

Gomez, Teodosio Diaz. Ice and snow anti-sliding device, applicable to wheels of vehicles. 3,847,196, Cl. 152-226.000.

Good, Paul F., to Speedco, Inc. Bulk-loading apparatus. 3,846,959, Cl. 53-61.000.

Good, William E.; and Digrasso, Leonard, to Kelsey-Hayes Company. Flash removal mechanism. 3,847,323, Cl. 228-3.000.

Goodfellow, Robert D., to Kennametal Inc. Rolling type excavating tool. 3,847,235, Cl. 175-372.000.

Goodley, George F., to FMC Corporation. Strapping machine feed. 3,847,071, Cl. 100-32.000.

Goodrich, B. F., Company, The: *See—*
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Goodspeed, Raymond F., to Teledyne, Inc.; d/b/a Teledyne. Decorative casting and method of fabrication thereof. 3,847,715, Cl. 161-7.000.

Goodwin, James: *See—*
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Gordon, Sherritt, Mines Limited: *See—*
Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.
Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.

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Gossage, Thomas M. Multi-purpose releasable connector. 3,847,488, Cl. 403-79.000.

Gotshall, William W., to Marathon Oil Company. Rubber compositions containing finely divided carbon treated with methanol. 3,847,862, Cl. 260-41.50r.

Gould, Maurice O., to Agricultural Enterprises, Inc. Livestock insecticide dispensing bag. 3,847,122, Cl. 119-159.000.

Governale, Luke J., to Ethyl Corporation. Alkyl aluminum disposal method. 3,848,053, Cl. 423-115.000.

Grace, W. R., & Company: *See—*
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Grachev, Leonid Pavlovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.

Graf, Ernest, to Ben Kahn Furs Corporation. Reversible fur garment. 3,846,844, Cl. 2-93.000.

Grammer, Don O'Neil: *See—*
Palmer, Nigel Innes; Sugarman, Nathan; and Grammer, Don O'Neil, 3,847,676.

Grane, Gunnar; and Kareby, Erik. Compacting device. 3,847,498, Cl. 404-133.000.

Grant, John W.: *See—*
Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.

Gravel, Jean J. O. Fiberglass reclaiming. 3,847,664, Cl. 134-2.000.

Gray Tech Industries, Inc.: *See—*
Stickler, Charles W., Jr., 3,847,341.

Gray, William R.: *See—*
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Lowe, Keith B.; and Gray, William R., 3,847,362.

Grazine, William: *See—*
Farrell, John J.; and Grazine, William, 3,847,529.

Green, Allan M.; and Pensky, Jack. Acidic monosaccharide-substituted proteins. 3,847,890, Cl. 260-112.500.

Green, Talmage O., to Snap-on Tools Corporation. Automatic release wrench of the preset type. 3,847,038, Cl. 81-52.40r.

Greer, Edward M. Hydro-pneumatic flexible bladder accumulator. 3,847,182, Cl. 138-30.000.

Gregory, Eric; Marancik, William G.; and Shattes, Walter J., to Airco Inc. Flashlamp with improved combustion foil and method of making same. 3,847,650, Cl. 117-71.00m.

Gregory, M. Duane: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.

Grey Tech Industries, Inc.: *See—*
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Griebsch, Eugen: *See—*
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Grimes, David E.: *See—*
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Groenendaal, Willem, to Shell Oil Company. Process for reducing the total sulfur content of Claus off-gases. 3,848,071, Cl. 423-574.000.

Gropper, Lee; Durland, Douglas H.; and Galasso, Maurice, to Beckman Instruments, Inc. Schlieren optical system employing a laser light source. 3,847,484, Cl. 356-129.000.

Groschel, Walter H.: *See—*
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Gross, Donald F., to General Electric Company. Method of constructing a labyrinth seal. 3,846,899, Cl. 29-401.000.

Gross, Jerome A. Rimless recapping apparatus utilizing balanced air pressures. 3,847,695, Cl. 156-96.000.

Grossan, Murray. Nasal irrigation system. 3,847,145, Cl. 128-66.000.

Grossman, Walter B., to Thiokol Chemical Corporation, mesne. Rolling diaphragm construction. 3,847,309, Cl. 222-386.500.

Grossmann, Gunter: *See—*
Moder, Hans-Ulrich; and Grossmann, Gunter, 3,848,116.

Grun, Charles: *See—*
Leparulo, Angelo F.; and Grun, Charles, 3,847,671.

Grunberger, Eberhard: *See—*
Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, 3,847,630.

Gruppo Lepetit S.p.A.: *See—*
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Grutter, Walter, to Bobst, J., & Fils, S.A. Apparatus for regulating the drive of a printing press or the like. 3,847,030, Cl. 74-242.14r.

GTE Automatic Electric Laboratories Incorporated: *See—*
Belcastro, Richard J., 3,848,262.

GTE Sylvania Incorporated: *See—*
Bowes, Robert J.; and Kerstetter, Donald R., 3,848,154.
Vanderpool, Clarence D.; and MacInnis, Martin B., 3,848,066.

Guermeur, Georges Roger; and Seigneur, Daniel, to Societe Industrielle Honeywell Bull (Societe Anonyme). Control circuit for thyristors. 3,848,140, Cl. 307-252.000.

Guibert, Raul, to Paulucci, Jeno F.; d/b/a Paulucci, Jeno F., Enterprises. Pizza baking oven with a helical rack and a radially driven impeller. 3,847,069, Cl. 99-443.00r.

Guidoni, Christian. Brassiere. 3,847,158, Cl. 128-492.000.

Guillory, Perry Gene, Sr. Highway safety fin. 3,847,497, Cl. 404-10.000.

Guillot, Joseph M., Jr., to Collins Radio Company. Hybrid electronic cirucit employing meshed support. 3,848,078, Cl. 174-52.00s.

Guinet, Jacques E.: *See—*
Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., 3,847,481.

Gulf Oil Canada Limited: *See—*
Cymbalisty, Lubomyr M. O., 3,847,789.

Gulf Resource & Chemical Corporation: *See—*
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Gulf-Western Manufacturing Company: *See—*
Pim, Norman L., 3,847,429.

Gulistan, Bulent, to Deutsch Fastener Corporation. Fastener with retractable plunger. 3,847,422, Cl. 292-60.000.

Gulley, Irvin, Sr. Ladder for picking fruit or the like. 3,847,245, Cl. 182-49.000.

Gulton Industries, Inc.: *See—*
Jonke, Joseph L.; and Clarke, Richard N., 3,848,180.

Gunther, Arnold, to Treadwell Corporation. Absorption of SO_2 from a dilute gas and desorption at a higher concentration in a stripping gas at sub-atmospheric pressure. 3,847,570, Cl. 55-73.000.

Gurley, Derrell G.; and Chisholm, James P., to Dow Chemical Company, The. Quick release coupling. 3,847,413, Cl. 285-316.000.

Gustav Schade Maschinenfabrik: *See—*
Fischer, Gerhard, 3,847,289.

Guth, Eugene Daniel; and Diaz, Arthur F., to KVB Engineering, Inc. Method for removing sulfur and nitrogen in petroleum oils. 3,847,800, Cl. 208-236.000.

Gutte, Richard: *See—*
Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.

Guy, Kenneth Theodore, to Lucas Aerospace Limited. Fluid feed systems. 3,847,172, Cl. 137-100.000.

Guzda, Jan J. Wire cutting and bending tool. 3,847,189, Cl. 140-106.000.

Gynn, George E., to Syncro Corporation. Regulating circuit. 3,848,177, Cl. 322-73.000.

Haag, Thomas H.; and Kine, Benjamin B., to Rohm & Haas Company. Stain resistant coating composition. 3,847,857, Cl. 260-29.6rw.

Haar, Kenneth W., to Haas, K. W., & Associates Co. Linear loading film processing device. 3,847,477, Cl. 354-312.000.

Haas, John W.: *See—*
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Haas, K. W , & Associates Co.: *See—*
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Haberkorn, Egon: *See—*
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Habermeier, Juergen: *See—*
Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.

Habert, William Charles; and Todd, Charles Edward, to Uniroyal, Inc. Apparatus for conveying a tire tread. 3,847,705, Cl. 156-405.000.

Habu, Teiji; Yoshida, Kyusaku; and Takahashi, Kazuo, to Konishiroku Photo Industry Co. Ltd. Antistatic dispersion comprising at least two kinds of organic solvents. 3,847,838, Cl. 252-500.000.

Hack, Heinrich, to Schenck, Carl, Maschinenfabrik GmbH. Apparatus for controlling the weight correction of workpieces prior to finish-machine. 3,847,055, Cl. 90-14.000.

Hackbarth, Wilhelm: *See—*
Thiesler, Ingo; and Hackbarth, Wilhelm, 3,847,403.

Haddad, Ihsan A.; and Krebs, William M., to Instrumentation Laboratory, Inc. Electrochemical analyzer. 3,847,777, Cl. 204-195.00p.

Hadden, Donald L.: *See—*
LeNay, Tom W.; and Hadden, Donald L., 3,848,241.

Hagar, Donald K., to Mosser Industries, Incorporated. Louver valve. 3,847,373, Cl. 251-298.000.

Hagenbach, Robert J.; and Lenhard, Myron J., to Xerox Corporation. Electrostatic imaging process using modular carriers. 3,847,604, Cl. 96-1.0xd.

Hagg, Per Borje: *See—*
Blomqvist, Nils Verner; and Hagg, Per Borje, 3,847,710.

Hagiwara, Masaki: *See—*
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Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, to Toray Industries, Inc. Cured phenol-formaldehyde fibers and method for the production thereof. 3,848,044, Cl. 26-176.00f.

Halcon International Inc.: *See—*
Onsager, Olav T., 3,847,876.

Hale, Martin M.; and Laurie, Kenneth A. Tea laser. 3,848,203, Cl. 331-94.500.

Hall, Donivan L.; and Kupper, Walter E., to Reliance Electric Company. Weighing scale with restrictive vertical movement. 3,847,238, Cl. 177-255.000.

Hall, John B., to International Flavors & Fragrances Inc. Perfume compositions containing substituted cyclohexane compounds. 3,847,975, Cl. 252-522.000.

Hall, John B.; and Lala, Lekhu Kewalram, to International Flavors & Fragrances Inc. Allylic oxidation of bicyclic hydrocarbons to alcohols and ketones. 3,847,993, Cl. 260-586.00p.

Halliburton Company: *See—*
Cole, Clinton W., 3,847,511.
Scott, Theron A.; and Hyde, Walter E., 3,847,223.

Halomet AG: *See—*
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Hamill, Robert L.: *See—*
Higgens, Calvin E.; and Hamill, Robert L., 3,847,742.

Hamilton, George M., to McDowell-Wellman Engineering Company. Gas producer having ash removal plates with individual temperature sensing. 3,847,562, Cl. 48-76.000.

Hamilton, MacKenzie L., to Garrett Corporation, The. Fuel tank inerting system. 3,847,298, Cl. 220-88.00b.

Hamilton, William F., to Mallay Corporation. Extrusion die plate. 3,847,530, Cl. 425-461.000.

Hammel, Wallace W., Jr., to Card & Co. Inc. Yarn feed module for tufting machine. 3,847,098, Cl. 112-79.00a.

Hammer, Edward E.; and Martyny, William C., to General Electric Company. Surface treatment of fluorescent lamp bulbs and other glass objects. 3,847,643, Cl. 117-33.50l.

Hansen, Erik J., to Inter-Nation Research Corporation. Air filter. 3,847,577, Cl. 55-385.000.

Hansen, Siegfried, to Hughes Aircraft Company. Hydraulically extensible strut. 3,846,950, Cl. 52-632.000.

Hanson, Robert B.; and Stephens, James R., to Standard Oil Company. Process for preparation of polyamide imides and shaped articles of same. 3,847,878, Cl. 260-78.0tf.

Harada, Susumu: *See—*
Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.

Harder, Arthur J., Jr., to Coach and Car Equipment Corporation. Slide mechanism with restraints against transverse movement. 3,847,452, Cl. 308-6.00r.

Harding, Carol, 20% to Lee, Raymond, Organization, Inc., The. Air freshening ash tray device. 3,847,575, Cl. 55-244.000.

Hardman, Dorsey Lorraine: *See—*
Dawson, Carlyle Steven; and Hardman, Dorsey Lorraine, 3,848,208.

Harmon, James E.; and Zeamer, Aaron C., to SCM Corporation. Collapsible line space lever mechanism. 3,847,264, Cl. 197-114.00r.

Harper, James G., to Texas Instruments Incorporated. Assembly method for semiconductor chips. 3,846,905, Cl. 29-589.000.

Harper, Robert Charles, to Cincinnati Milacron Inc. Methods of producing oil-free and wax-free surfaces on polyurethane moldings. 3,848,037, Cl. 264-46.400.

Harper, Robert J., Jr.; Blanchard, Eugene J.; and Gautreaux, Gloria A., to United States of America, Agriculture. Process for preparing frosted and multicolored cotton pile fabrics. 3,847,542, Cl. 8-66.000.

Harris, Robert F.: *See—*
Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., 3,847,927.

Hartline, Albert G., III, to Allegheny Ludlum Industries, Inc. Corrosion resistant austenitic steel. 3,847,599, Cl. 75-122.000.

Hartmann, Ludwig, to Freudenberg, Carl. Deep-drawable plastic composite comprising plastic film on fibrous support. 3,847,729, Cl. 161-256.000.

Hartwell, John W.: *See—*
Williams, Redford B., Jr.; and Hartwell, John W., 3,847,142.

Hase, Alfred Max. Storage battery charging apparatus. 3,848,173, Cl. 320-23.000.

Hasegawa, Tetsuo: *See—*
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Hasenbeck, Harold W. Soil matric potential sensor. 3,847,351, Cl. 239-63.000.

Hashimoto, Kazunori: *See—*
Tanaka, Satoru; and Hashimoto, Kazunori, 3,847,924.

Hashimoto, Tsutomu: *See—*
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Hattori, Keisuke: *See—*
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Hauni-Werke Korber & Co. K.G.: *See—*
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Haupin, Warren E., to Aluminum Company of America. Bath control. 3,847,761, Cl. 204-67.000.

Havdala, Samuel: *See—*
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Hayashi, Masataka: *See—*
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Hayward, Robert D.; and Chapman, James E., to Gilbert Engineering Company, Inc. Cable connector apparatus. 3,847,463, Cl. 339-8.00p.

Hea Rehab AB: *See—*
Mattsson, Bertil, 3,847,440.

Heady, Robert E.; and Jacaway, William A., Jr., to CPC International, Inc. Process for the production of levulose-bearing syrups. 3,847,740, Cl. 195-31.00f.

Heady, Robert E.; and Jacaway, William A., Jr., to CPC International Inc. Temperature-programmed process for the production of levulose-bearing syrups. 3,847,741, Cl. 195-31.00f.

Heath, Darrell R.; and Wirth, Joseph G., to General Electric Company. Polyetherimides. 3,847,867, Cl. 260-47.0cp.

Hebert, James O., Jr.; and Fitzgerald, Donald F. Battery tester with an improved load circuit. 3,848,181, Cl. 324-29.500.

Hecht, Leon N., Jr.: *See—*
Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.

Heckrotte, Robert Sherwood; and Scott, John Alexander, to Du Pont de Nemours, E. I., and Company. Spinneret blanketing apparatus. 3,847,522, Cl. 425-72.000.

Hegedus, Eduardo; and Hegedus, George. Hanging filing-card cabinets. 3,847,459, Cl. 312-184.000.

Hegedus, George: *See—*
Hegedus, Eduardo; and Hegedus, George, 3,847,459.

Heger, Alois. Comminutor for bulky objects. 3,847,361, Cl. 241-152.000.

Heiberger, Francis E., to Danly Machine Corporation. Bidirectional zero speed switch. 3,848,165, Cl. 318-207.00r.

Heidelberger Druckmaschinen AG: *See—*
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Heinemann, Klaus: *See—*
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Heinzelmann, Karl-Georg: *See—*
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Heizman, Charles L.: *See—*
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Helbig, Gerald R., to Xerox Corporation. Cover for wire wrapped card chassis. 3,847,479, Cl. 355-14.000.

Helm, Leon E. Magnetic light assembly. 3,848,227, Cl. 340-74.000.

Hemens, James Frederick, to Teleflex Limited. Control devices. 3,847,034, Cl. 74-491.000.

Henkel & Cie GmbH: *See—*
Compernass, Josef; Grunberger, Eberhard; and Schmidt, Friedo Eberhard, 3,847,630.

Hentschel, Michael, to Sina Aktiengesellschaft fur Instrumentierung und Automatik. Circuit arrangement for determining the voltage fraction ratio of a voltage divider. 3,848,185, Cl. 324-57.00r.
Herbert, Colin Wray. Shaft arrangements. 3,847,453, Cl. 308-36.100.
Hercules Incorporated: *See—*
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Breslow, David W.; and Simpson, David A., 3,847,609.
Herd, David P., to McEvoy Oilfield Equipment Co., mesne. Underwater well completion method and apparatus. 3,847,215, Cl. 166-.600.
Herman, Stewart T.; and Horst, Russel J., to Bethlehem Steel Corporation. Removal of cyanide and color bodies from coke plant wastewater. 3,847,807, Cl. 210-46.000.
Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., to Curtiss-Wright Corporation. Rotary piston for a rotary internal combustion engine. 3,847,517, Cl. 418-91.000.
Herr, Milton E.; Murray, Herbert C.; and Fonken, Gunther S., to Upjohn Company, The. Oxygenated N-benzolyl-N,2,3,3-tetramethyl-exo-2-norbornanamines. 3,847,982, Cl. 260-558.00r.
Herrell, Dennis J., to International Business Machines Corporation. Multicontrol logic gate design. 3,848,259, Cl. 357-5.000.
Herrmann, Gunter, to Messerchmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung. Vehicle accident protection system and method of protecting passengers. 3,847,411, Cl. 280-150.0ab.
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Kordesch, Karl V.; and Clark, Milton B., to Union Carbide Corporation. Hydrazine concentration sensing cell for fuel cell electrolyte. 3,847,673, Cl. 136-86.00b.

Korkonosov, Valentin Petrovich: *See—*
Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.

Korpiun, Olaf: *See—*
Hetzel, Eckhard; and Korpiun, Olaf, 3,847,964.

Koshar, Robert J., to Minnesota Mining and Manufacturing Company. Fluoroaliphatictthiomethylsiloxanes. 3,847,961, Cl. 260-448.0rn.

Koyama, Mitsuo: *See—*
Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, 3,847,476.

Kozacka, Frederick J.; and Salzer, Erwin, to Case-Shawmut Company, The. Fluid-tight electric fuse. 3,848,215, Cl. 337-246.000.

Kozmin, Mikhail Ivanovich. Method of continuous fabrication of glass-crystalline materials with rib configuration. 3,847,582, Cl. 65-33.000.

Kozoman, Frank E.: *See—*
Smith, Ralph E.; and Kozoman, Frank E., 3,847,749.

Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich. Explosive circuit-breaker. 3,848,100, Cl. 200-61.080.

Kramer, Dean; and Crawford, Jay D. Pitless well adapter. 3,847,217, Cl. 166-85.000.

Kramer, Gunter; and Glaser, Helmut, to Varta Aktiengesellschaft. Alkaline accumulator operated in gas-tightly sealed condition. 3,847,668, Cl. 136-6.00g.

Kramer, Louis E. Internal combustion engine. 3,847,124, Cl. 123-51.00b.

Krauss-Maffei Aktiengesellschaft: *See—*
Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, 3,847,525.
Zurek, Rudolf; and Modersohn, Dieter, 3,847,256.

Krebs, William M.: *See—*
Haddad, Ihsan A.; and Krebs, William M., 3,847,777.

Krehbiel, Delmar D.: *See—*
Clark, Charles R.; Gregory, M. Duane; Kerfoot, Oliver C.; Veatch, Fred C.; Krehbiel, Delmar D.; and Kennedy, Carl D., 3,847,823.

Kreider, Benjamin A.; and Matalsky, William J., to Abar Corporation. Driving machanism for vacuum electric furnaces. 3,847,539, Cl. 432-121.000.

Kreider, Eunice M., to Searle, G. D., & Co. N-[1-(3-cyano-3,3-diphenylpropyl)-4-phenylpiperidine -4-carbonyloxy]succinimide and glutarimide. 3,847,923, Cl. 260-281.000.

Kreiskott, Horst: *See—*
Bub, Oskar; Friedrich, Ludwig; Hofmann, Hans-Peter; Kreiskott, Horst; and Zimmermann, Frank, 3,847,905.

Krembel, Frank, Jr., to Columbia Marking Tools, Inc. Pneumatically operated marking tool. 3,847,078, Cl. 101-3.00r.

Kreutzer, Robert H., to General Electric Company. Flow-coating apparatus. 3,847,111, Cl. 118-2.000.

Kripl, Josef F.; deceased (by Kripl, Maria A.; executrix), to International Business Machine Corporation. Brushless DC-tachometer. 3,848,157, Cl. 317-5.000.

Kripl, Maria A.: *See—*
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Krone, Donald R.: *See—*
Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F., 3,847,302.

Krone GmbH: *See—*
Marko, Hans, 3,848,096.

Krone, Russell R.; Krone, Donald R.; Buchanan, George E.; and Noyes, James F. Gasoline dispensing system. 3,847,302, Cl. 222-14.000.

Krosnar, Thomas Charles: *See—*
Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, 3,847,965.

Kroth, Neil W.; Lohbauer, Kenneth R.; and Scheidt, James E., to Caterpillar Tractor Company. Low effort, proportional control valve. 3,847,180, Cl. 137-596.130.

Krueger, Dennis L., to Minnesota Mining and Manufacturing Company. Separator for removing a dispersed liquid phase from a continuous liquid phase. 3,847,821, Cl. 210-488.000.

Kruse, Fritz, to Wohlenberg, H., Kommanditgesellschaft. Device for exact angle-positioning of paper piles in paper cutters. 3,847,386, Cl. 271-171.000.

Krydcr, Robert A.: *See—*
Parker, William Andrew; and Kryder, Robert A., 3,848,123.

Kuerten, Heribert; and Nagel, Otto, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Method and apparatus for mixing liquids. 3,847,375, Cl. 259-4.000.

Kuhlmann, George E., to Standard Oil Company. Yield of trimellitic acid improved by phthalic anhydrides or its precursors. 3,847,976, Cl. 260-524.00r.

Kuhnert, Hans, to Heidelberger Druckmaschinen AG. Machining center with a storage drum rotatable about a horizontal axis. 3,846,904, Cl. 29-568.000.

Kukhar, Vasily Valentinovich: *See—*
Blinov, Boris Vladimirovich; and Kukhar, Vasily Valentinovich, 3,847,602.

Kulczycki, Stanley N.; and Betts, Edward E., to McDonnell Douglas Corporation. Track fastener. 3,847,344, Cl. 248-503.000.

Kulnevich, Vladimir Grigorievich: *See—*
Smirnov, Vladimir Alexandrovich; Kulnevich, Vladimir Grigorievich; Soltovets, Galina Nikolaevna; and Semchenko, Dmitry Platonovich, 3,847,952.

Kumagai, Henry Yasuo, to Western Electric Company, Incorporated. Article of manufacture having a film comprising nitrogen-doped beta tantalum. 3,847,658, Cl. 117-201.000.

Kume, Toyohiko: *See—*
Kishino, Shigeo; Yamada, Yasuo; Kurashashi, Yoshio; and Kume, Toyohiko, 3,848,031.

Kummerman, Henri, to Mac Gregor-Comarain S.A. Movable access ramp for vehicles. 3,846,860, Cl. 14-71.000.

Kunert, Max; and Sandhack, Lothar, to Deutsche Texaco Aktiengesellschaft. Process for the production of normal paraffins by urea dewaxing of mineral oil distillates. 3,847,791, Cl. 208-25.000.

Kupper, Walter E.: *See—*
Hall, Donivan L.; and Kupper, Walter E., 3,847,238.

Kuramoto, Nobuyuki: *See—*
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Kuraray Co., Ltd.: *See—*
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Kurashashi, Yoshio: *See—*
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Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, 3,848,070.

Kurita, Hirohisa, to Kabushiki Kaisha Suwa Seikosha. Automatic winding watch with bridge plate offset to receive automatic winding mechanism. 3,846,973, Cl. 58-82.00r.

Kuroiwa, Tadaharu; Isayama, Yukio; Yokota, Akira; Kamio, Tsukasa; Kinnai, Kazuhiko; Abe, Eiichi; Kimura, Kunio; Hioki, Morihisa; and Noguchi, Hisataka, to Industrial Science and Technology, Director General of the Agency of. Method for treating sludge formd in city sewage systems. 3,847,806, Cl. 210-45.000.

Kushnir, Bud W.: *See—*
Fustukian, David A. W.; Kushnir, Bud W.; Norris, Leon F.; and Fraser, Robert W., 3,847,680.

Kusters, Eduard, Maschinenfabrik: *See—*
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Kustom Electronics, Inc.: *See—*
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KVB Engineering, Inc.: *See—*
Guth, Eugene Daniel; and Diaz, Arthur F., 3,847,800.

Kyle Incorporated: *See—*
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Kyowa Hakko Kogyo Co., Ltd.: *See—*
Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, 3,847,747.

La Bate, James B. Adjustable self wedging devices for side boards in ingot molds. 3,847,343, Cl. 249-202.000.

La Porte Industries Limited: *See—*
Williams, Selwyn Donald; Leaver, John Philip; and Abbott, David, 3,847,830.

Labana, Santokh S.; and Theodore, Ares N., to Ford Motor Company. Thermoset molding powders employing glycidyl methacrylate-functional polymers and monomeric anhydride crosslinking agents and molding thereof. 3,847,863, Cl. 260-42.180.

Laberinti, Cesare: *See—*
Ghersa, Piero; Torghele, Flavio; and Laberinti, Cesare, 3,847,693.

Laberinti, Cesare, to Industrie Pirella S.p.A. Upholstery articles and process for their manufacture. 3,847,720, Cl. 161-159.000.

Laboratories Made, S.A.: *See—*
Brana Fernandez, Miguel; and Roldan Martinez, Christobal, 3,847,941.

Lackner, Heinrich, to Vianova-Kunstharz, A.G. Water soluble resins and process for the preparation thereof. 3,847,849, Cl. 260-19.0ep.

Lahm, Heinrich: *See—*
Foll, Gerhard; and Lahm, Heinrich, 3,846,880.

Laine, Bernard Maurice: *See—*
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Lake, John H.: *See—*
Mallander, Richard G.; and Lake, John H., 3,847,023.

Lala, Lekhu Kewalram: *See—*
Hall, John B.; and Lala, Lekhu Kewalram, 3,847,993.

Lalancette, Jean-Marc, to Ventron Corporation. Methanation processes. 3,847,963, Cl. 260-449.00m.

Lam, Lucilo; and Cartaya, Guillermo Hernandez. Draftsman's device. 3,846,914, Cl. 33-110.000.

Lamberet, Paul. Material handling or transfer equipment. 3,847,106, Cl. 115u7.000.

Lambert, Harry, to Barton-King Systems Corporation. Structural self-supporting system. 3,846,944, Cl. 52-758.00r.

Lambertoni, Oreste, to Pages Holding S.A. Melting equipment for melting snow and ice. 3,847,137, Cl. 126-271.20a.

Lamping, Harold D.: *See*—
Hermes, Walter L.; Corwin, Howard R.; Berkowitz, Murray; and Lamping, Harold D., 3,847,517.

Lamy, Jacques Edouard, to Doris, C. G., (Compagnie Generale pour les Development Operationnels des Richesses Sous Marines). Swell damper. 3,846,988, Cl. 61-3.000.

Landauer, LeRoy; Blakslee, Edward Leroy; Abraham, Benjamin Ichak; and Stieglitz, Henry Gilbert, to American Can Company. Roll-through method and apparatus for electrocoating can ends. 3,847,786, Cl. 204-300.000.

Landriscina, Vincent James, Jr.: *See*—
Marchitto, Michael James; and Landriscina, Vincent James, Jr., 3,847,824.

Lange, Robert G.; and Kobeski, Walter D., to United States Gypsum Company. Thixotropic cementitious composition and process. 3,847,635, Cl. 106-110.000.

Laniewski, Leonard W.: *See*—
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Lapkin, Milton: *See*—
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Lappin, Terry A.: *See*—
Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, 3,847,750.

Laran, Roy J.: *See*—
Shepherd, Lawrence H., Jr.; Kobetz, Paul; Laran, Roy J.; and Johnson, Robert W., Jr., 3,847,998.

Largman, Theodore; and Stone, Herman, to Allied Chemical Corporation. Polyethylene terephthalate. 3,847,861, Cl. 260-40.00r.

Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, to Gevaert-Agfa N.V. Photopolymerisation of ethylenically unsaturated organic compounds. 3,847,610, Cl. 96-35.100.

Latos, Edwin J., to Universal Oil Products Company. Working of non-ferrous metals. 3,847,828, Cl. 252-56.00r.

Laubner, Jurgen: *See*—
Dany, Franz-Josef; Wortmann, Joachim; Kandler, Joachim; and Laubner, Jurgen, 3,847,843.

Laue, Wolfgang; Schreiber, Eckehard; and Heyenga, Friedrich, to Gewerkschaft Victor Chemische Werke, Firma. Process for preparing concentrated fluorosilicic acid. 3,848,061, Cl. 423-341.00.

Laurent, Daniel; and Izord, Jean. Bridge connector for phase conductor of current collecting system. 3,847,255, Cl. 191-38.000.

Laurie, Kenneth A.: *See*—
Hale, Martin M.; and Laurie, Kenneth A., 3,848,203.

Laurion, Francis R. Spoke wheel and wheel ornament. 3,847,443, Cl. 301-37.00r.

Lavik, Melvin T.; and Hubbell, Ronald D., to Midwest Research Institute. Partially carbonized organic polymers as matrices for self-lubricating films and composites. 3,847,825, Cl. 252-12.000.

Lazzari, Jean-Pierre, to Campagnie Internationale Pour l'Informatique. Magnetoresistive devices and transducers. 3,848,217, Cl. 338-32.00r.

Lazzarotti, James: *See*—
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Le Parquier, Guy: *See*—
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Leaver, John Philip: *See*—
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Lebow, Stanley Morris: *See*—
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Leder, Frederic; Savage, David W.; and Shrier, Adam L., to Exxon Research and Engineering Company. Method and composition for removing acidic contaminants from gases. 3,848,057, Cl. 423-223.000.

Lee, Allan Henry: *See*—
Van der Meulen, Sjaak Johan; Weizenbach, Bauke; Lee, Allan Henry; and Kinjerski, Theodore Andrew, 3,847,594.

Lee, Fred S.; and Vysniauskas, Jonas K., to Honeywell Information Systems, Inc. Magnetic field coil assembly for a magnetic bubble domain device. 3,848,209, Cl. 336-188.000.

Lee, Pedro: *See*—
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Lee, Raymond, Organization, Inc., The: *See*—
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Therrien, John A., 3,847,352.
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Lee, Robert E., Jr., to International Production Technology Corporation. Contact assembly utilizing flexible contacts for pins of integrated circuits. 3,848,221, Cl. 339-74.00r.

Leeds and Micallef: *See*—
Micallef, Lewis A., 3,847,313.

Lehner, Alphonse C.; and Boeye, Paul E., to Liberty Carton Co. Display container for toys. 3,847,276, Cl. 206-45.140.

Leibenzon, Mikhail Grigorievich: *See*—
Andreev, Sergei Vasilievich; Leibenzon, Mikhail Grigorievich; Trushin, Jury Petrovich; and Luzgin, Mikhail Sergeevich, 3,847,113.

Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., to Omnitext, Inc. Interpretive display processor. 3,848,232, Cl. 340-172.500.

Leifeld, Ferdinand: *See*—
Schneppenhorst, Ernst; and Leifeld, Ferdinand, 3,848,039.

Leis, Arthur F. Stock feeder. 3,846,997, Cl. 72-6.000.

Leitz, Ernst, GmbH: *See*—
Broemer, Heinz; and Meinert, Norbert, 3,847,624.

Lemke, Arthur A., to FMC Corporation. Method and apparatus for treating waste material. 3,847,802, Cl. 210-7.000.

Lemond, Robert H. Shower head additive dispenser. 3,847,354, Cl. 239-317.000.

LeNay, Tom W.; and Hadden, Donald L., to Baker Industries, Inc. Test and integrity equipment for a McCulloh system. 3,848,241, Cl. 340-214.000.

Lenhard, Myron J.: *See*—
Hagenbach, Robert J.; and Lenhard, Myron J., 3,847,604.

Lenz, George R., to Searle, G. D., & Co. 3-Oxygenated 23-di (lower alkyl)amino-22-methyl-norchola-24-4/5,20(22)-dienes and intermediates. 3,847,954, Cl. 260-397.100.

Lepage, Louis, to Antargaz Societe Anonyme de Distribution de Gaz Liquides de Petrole. Radiant burner operating at high temperature. 3,847,536, Cl. 431-329.000.

Leparulo, Angelo F.; and Grun, Charles, to Electromedia, Inc. Hydraulically-refuelable metal-gas depolarized battery system. 3,847,671, Cl. 136-86.00a.

Leprince, Bernard. Illuminated display stand for wigs and cosmetics. 3,847,285, Cl. 211-1.500.

Leroi, Jean-Claude: *See*—
Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.

Lesuer, William Monroe; and Dunn, Horton, Jr., to Lubrizol Corporation, The. Process for preparing phosphorus-containing acids. 3,848,032, Cl. 260-981.000.

Leumann, Ernst: *See*—
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Levitz Furniture Corporation: *See*—
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Lewis, Alan Glueck, to GAF Corporation. Collapsible steroscopic viewer. 3,847,467, Cl. 350-140.000.

Lewis, Arthur E.: *See*—
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Lewis, David Otto; and Miller, Thomas Howard, to International Business Machines Corporation. Scan and read control apparatus for a disk storage drive in a computer system. 3,848,235, Cl. 340-172.500.

Lewis, John C., to Park-Ohio Industries, Inc. Inductor for heating elongated metal workpieces. 3,848,107, Cl. 219-10.790.

L'Hermite, Alain A.: *See*—
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Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, to Cominco Ltd. Lead smelting process. 3,847,595, Cl. 75-77.000.

Liautaud, Jean A., to Subsea Equipment Associates Limited. System of connection of a pipeline to an underwater pipeline and a method of putting it into effect. 3,846,992, Cl. 61-72.300.

Liberty Carton Co.: *See*—
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Liberty Tool & Die Co., The: *See*—
Seil, Herbert, 3,847,162.

Lichtenberg, Alfred, to Siemens Aktiengesellschaft. Power transmission arrangement for a magnetic suspension railroad. 3,847,087, Cl. 104-148.0ms.

Liefeld & Co.: *See*—
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Lightner, Linn Stephen, to AMP Incorporated. Zero entry connector system. 3,848,222, Cl. 339-75.00m.

Lilliston Corporation: *See*—
Frushour, George Victor; and Nafziger, Marvin Lee, 3,846,964.

Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A. 15-Lower alkoxy PGB compounds. 3,847,967, Cl. 260-468.00d.

Lind, Bengt Anders: *See*—
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Lindbergh, Sven-Olof: *See*—
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Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., to Esso Research and Engineering Company. Process for the preparation of cyclopropylmethyl alkyl amines. 3,847,984, Cl. 260-563.00r.

Linder, Jerome; Maravetz, Lester L.; Schmit, George M.; and Newman, Neil F., to Esso Research and Engineering Company. Process for the preparation of cyclopropylmethyl alkyl amines. 3,847,985, Cl. 260-563.00r.

Lindner, Franz Friedrich. Rotating prism for projectors. 3,847,471, Cl. 353-81.000.

Lindros, Charles J.: *See—*
Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., 3,847,345.
Lipha, Lyonnaise Industrielle Pharmaceutique: *See—*
Szarvasi, Etienne; and Fontaine, Louis, 3,847,911.
Litchfield, Mason Rawleigh, to Smith International, Inc. Drilling fluid saver and safety valve. 3,847,372, Cl. 251-248.000.
Little, Arthur D., Inc.: *See—*
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Livingston, James D., to General Electric Company. Directional eutectoid composites by solid-state up-transformation. 3,847,679, Cl. 148-2.000.
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Lloyd, Richard, Limited: *See—*
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Lock, William E. Machine for testing and straightening arrows. 3,846,998, Cl. 72-34.000.
Locke, Edward V., to Avco Everett Research Laboratory, Inc. Apparatus for heat treating a surface. 3,848,104, Cl. 219-121.00l.
Loffelmann, Fritz: *See—*
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Logma Aktiebolag: *See—*
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Lotan, Amram Zvi; and Jen, Dixson Teh-Chao, to Bunker Ramo Corporation. Method and apparatus for interfacing with a central processing unit. 3,848,233, Cl. 340-172.500.
Louderback, Allan L.: *See—*
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Love, Robert B.; and Radwill, Robert P., to Amsted Industries Incorporated. Truck center plate bearing. 3,847,090, Cl. 105-199.00c.
Lovens Kemiske Fabrik Produktionsaktieselskab: *See—*
Godtfredsen, Wagn Ole, 3,847,913.
Lovett, John R. Method of mounting a resilient sleeve on a conveyer roller. 3,846,901, Cl. 29-450.000.
Lowe, Keith B.; and Gray, William R., to Allis-Chalmers Corporation. Adjustable and yieldable breaker bar supports for impact crusher. 3,847,358, Cl. 241-32.000.
Lowe, Keith B.; and Gray, William R., to Allis-Chalmers Corporation. Rotor for impact crusher. 3,847,362, Cl. 241-191.000.
LTV Aerospace Corporation: *See—*
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Luscher, Jakob. Assembly comprising a quartz oscillator delivering two-phase periodic signals and a divider for the frequency of said signals. 3,848,200, Cl. 331-51.000.
Luszczak, Myron Michael, to United States Gypsum Company. Stable wax sizing composition and method of sizing cellulosic fiber products. 3,847,637, Cl. 106-271.000.
Luy, Hasso. Method and apparatus for leak testing of filled-up and closed containers. 3,847,013, Cl. 73-40.700.
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Lynch, Thomas, to Xerox Corporation. Sheet stacking method and apparatus. 3,847,388, Cl. 271-174.000.
M&T Chemicals Inc.: *See—*
Althouse, Harlan E.; Scott, Fremont L.; and Cole, Gordon E., Jr., 3,847,654.
Maassen, Wilhelm: *See—*
Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, 3,847,364.
Mac Gregor-Comarain S.A.: *See—*
Kummerman, Henri, 3,846,860.
MacDonald, Thomas Richard, to Sperry Rand Corporation. Multiprocessor system with multiple cache memories. 3,848,234, Cl. 340-172.500.
MacFarlane, Alistair C.: *See—*
Applegath, Fred; DuPree, Louis E., Jr.; MacFarlane, Alistair C.; and Robinson, Jacques D., 3,848,012.
Machet, Michael W. Method of manufacturing a simulated stained glass article. 3,848,046, Cl. 264-279.000.
Machkova, Zuzana: *See—*
Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.
MacInnis, Martin B.: *See—*
Vanderpool, Clarence D.; and MacInnis, Martin B., 3,848,066.
MacIntyre, Alfred J., Jr., to Sanders Associates, Inc. Gaseous discharge device. 3,848,248, Cl. 340-324.00m.
MacMillan, Kenneth T., to MacMillan Mold Company, Inc. Apparatus for and method of retreading tires. 3,847,631, Cl. 156-96.000.
MacMillan Mold Company, Inc.: *See—*
MacMillan, Kenneth T., 3,847,631.
MacNeill, John H., to Optical Business Machines, Inc. Visual display of unrecognizable characters in optical character recognition machines. 3,848,228, Cl. 340-146.30f.
Macovski, Albert. Selective material X-ray imaging system. 3,848,130, Cl. 250-369.000.
Madsen, Rud Frik; Olsen, Ole Jentoft; and Stenseng, Mogens Martin, to Aktieselskabet de Danske Sukkerfabrikker. Apparatus for separating fluids into two fractions by means of semipermeable membranes. 3,847,818, Cl. 210-321.000.
Madura, Francis Eli, to Amsted Industries Incorporated. Front bearing block assembly for tractor fifth wheel. 3,847,414, Cl. 280-437.000.
Maggs, Frederick Arthur Pomroy: *See—*
Bailey, Alan; and Maggs, Frederick Arthur Pomroy, 3,847,833.
Magna Corporation: *See—*
Rohrback, Gilson H.; and Homes, Elmond A., 3,848,187.
Magnaflux Corporation: *See—*
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Gerner, James; and Suhr, Peter J., 3,848,182.
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Mahoney, John F.; and Perel, Julius, to Xerox Corporation. Multi-jet ink printer. 3,848,258, Cl. 346-140.000.
Maier, Herbert: *See—*
Dederer, Roland; Jahns, Erwin; Maier, Herbert; Moser, Joachim; and Vierling, Karl-Heinz, 3,847,470.
Majima, Kazu: *See—*
Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, 3,847,130.
Malak, Thomas Paul, to Kewanee Oil Company. Method of improving the corrosion protection of decorative chrome plated articles. 3,847,760, Cl. 204-35.00r.
Malherbe, Alfred Andre. Carburetor. 3,847,125, Cl. 123-119.00a.
Mallander, Richard G.; and Lake, John H., to Shell Oil Company. Sampling device and system. 3,847,023, Cl. 73-423.00r.
Mallay Corporation: *See—*
Hamilton, William F., 3,847,530.
Mallory Battery Company of Canada Limited: *See—*
Przybyla, Franciszek, 3,847,784.
Maltby, Peter John; Glaze, Stanley George; Ellis, Kenneth Harold; Craven, Donald; and Binns, John Michael, to Lucas Aerospace Limited. Control apparatus for a powered hoist. 3,847,251, Cl. 187-29.00r.
Mangiavacchi, Jacques, to Societe Anonyme: Glaenzer Spicer. Sealing device for use in universal joints. 3,846,995, Cl. 64-17.00r.
Mann, Herbert: *See—*
Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.
Mannesmann & Keppel Electronics: *See—*
Keppel, Wolf-Dieter, 3,847,178.
Manor, Robert T. Valve mechanism for an air operated reciprocating engine. 3,847,058, Cl. 91-413.000.
Mapes, Brian Edward George: *See—*
Pegler, John Owen Michael; and Mapes, Brian Edward George, 3,847,555.
Marancik, William G.: *See—*

Gregory, Eric; Marancik, William G.; and Shattes, Walter J., 3,847,650.

Marathon Oil Company: *See—*
Gotshall, William W., 3,847,862.

Maravetz, Lester L.: *See—*
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Maravetz, Lester L. M.: *See—*
Linder, Jerome; Maravetz, Lester L. M.; Schmit, George N.; and Newman, Neil F., 3,847,984.

Marchitto, Michael James; and Landriscina, Vincent James, Jr. Solid stick lubricant for tapping holes. 3,847,824, Cl. 252-12.000.

Margosiak, Stanley A.: *See—*
White, Roy A.; and Margosiak, Stanley A., 3,847,852.

Margrafe, Rodolphe: *See—*
Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, 3,847,868.

Marino, Louis L.: *See—*
Race, Andras, 3,847,633.

Marion, Charles P.; and Reynolds, Blake, to Texaco Development Corporation. Apparatus and process for burning liquid hydrocarbons in a synthesis gas generator. 3,847,564, Cl. 48-95.000.

Marko, Hans, to Krone GmbH. Method of and means for holographically recording and reproducing information. 3,848,096, Cl. 179-100.30g.

Marks, Louis W., to General Electric Company. Combined power and instrument potential transformer. 3,848,178, Cl. 323-6.000.

Markus, Harold: *See—*
Waldman, Jeffrey; Sulinski, Harry V.; and Markus, Harold, 3,847,681.

Marous, George R.: *See—*
Goebel, Robert W.; and Marous, George R., 3,848,145.

Marr, Harry Sidney; and Chester, Arnold, to British Iron and Steel Research Association, The. Molten metal pouring valve having valve actuator extending through inclined channel. 3,847,312, Cl. 222-501.000.

Marrian, Stanley Frederic: *See—*
Gasson, Edward James; Marrian, Stanley Frederic; and Krosnar, Thomas Charles, 3,847,965.

Marshall, Robert, to Bunker-Ramo Corporation, The. Quenched photoluminescent displays and a power circuit latching means therefore. 3,848,245, Cl. 340-324.00r.

Marshall, Stuart Malcolm: *See—*
Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.

Marti, Rueben A.: *See—*
Forbess, Dennis L.; Kindler, William A., Jr.; and Marti, Rueben A., 3,848,027.

Martin, Arlin E., to Duriron Company, Inc., The. In-line pump. 3,847,504, Cl. 415-201.000.

Martin, Marcus. Functional stand for roll materials. 3,847,709, Cl. 156-510.000.

Martin, Robert B.; and Jones, Carl T., to Gautney & Jones Communications, Inc. Nationwide system for selectively distributing information. 3,848,193, Cl. 325-53.000.

Martyashin, Alexandr Ivanovich; Morozov, Andrei Elizarovich; Shakhov, Eduard Konstantinovich; and Shlyandin, Viktor Mikhailovich. Method of measuring parameters of complex electric circuit and device for effecting same. 3,848,186, Cl. 324-57.00r.

Martyny, William C.: *See—*
Hammer, Edward E.; and Martyny, William C., 3,847,643.

Maruyama, Tsutomu, to Kansai Paint Company, Limited. Radiation-curable coating composition. 3,847,768, Cl. 204-159.140.

Marx, Dieter O.: *See—*
Cosham, Michael A.; and Marx, Dieter O., 3,846,895.

Mas, Robert J.; and Michaud, Andre Louis, to Fabriques de Produits Chimiques de Thann et de Mulhouse. Process for the production of titanium tetrachloride. 3,848,051, Cl. 423-79.000.

Masaki, Kenji; and Aono, Shigeo, to Nissan Motor Company, Limited. Engine output measuring device. 3,847,019, Cl. 73-117.300.

Mascall, John Robert, to Churchill Instrument Company Limited. Temperature controlled systems. 3,847,209, Cl. 165-14.000.

Maslakov, Petr Avramovich: *See—*
Klushin, Nikolai Alexandrovich; Maslakov, Petr Avramovich; Kilin, Viktor Evdokimovich; Yankovsky, Oleg Alexandrovich; and Galimov, Anas Galimovich, 3,847,232.

Maslen, Frank Peter: *See—*
Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.

Masonite Corporation: *See—*
Daunheimer, Lyn R.; and Irvine, William M., 3,847,646.

Massa Division Dynamics Corporation of America: *See—*
Massa, Frank, 3,847,662.

Massa, Frank, to Massa Division Dynamics Corporation of America. Apparatus and method for sonic cleaning of human teeth. 3,847,662, Cl. 134-1.000.

Masser, Lloyd D., to Lear Siegler, Inc. Dual rim wheel structure. 3,847,442, Cl. 301-13.0sm.

Masson, Andre; and Joubert, Jack, to Etablissements Pierre Angenieux. Lighting projector. 3,848,119, Cl. 240-1.400.

Massonne, Joachim: *See—*
Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, 3,848,064.

Mast, Aquila D.; Eggers, Edward T.; and Hyman, Myles, to Sperry Rand Corporation. Hay roll forming machine. 3,847,073, Cl. 100-88.000.

Masuda, Sakae: *See—*
Kaneko, Shiro; Masuda, Sakae; Ujihara, Motohiro; and Uchida, Yosuke, 3,847,616.

Masuda, Toshio: *See—*
Suzuki, Tsunao; Senuma, Mitsushi; Takakura, Ichiro; and Masuda, Toshio, 3,847,853.

Masui, Yasuyuki, to Kabushiki Kaisha Daini Seikosha. Time indicator for a timepiece. 3,846,975, Cl. 58-126.00a.

Matalsky, William J.: *See—*
Kreider, Benjamin A.; and Matalsky, William J., 3,847,539.

Matsuda, Mitsuhiro: *See—*
Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, 3,847,851.

Matsuhisa, Koh, to Ricoh Co., Ltd. Platen mechanism in which angular position of each of a plurality of platen members disposed coaxially may be adjusted independently of others. 3,847,261, Cl. 197-129.000.

Matsui, Kunio: *See—*
Fujii, Seiji; Matsui, Kunio; Sato, Shigeru; Ito, Keijiro; Koizumi, Takashi; Tsuboyama, Shozo; and Watanabe, Hiroyuki, 3,848,127.

Matsui, Rokuro: *See—*
Itoh, Yohnosuke; Yokota, Kozo; Watanabe, Tetsuya; and Matsui, Rokuro, 3,847,601.

Matsukawa, Hiroharu; and Saeki, Keiso, to Fuji Photo Film Co., Ltd. Process for microencapsulating hydrophobic oil droplets and product of said process. 3,847,832, Cl. 252-316.000.

Matsumura, Sakujiro; Yamamura, Tadashi; Ogura, Akira; and Hayashi, Masataka, to Toyo Tire Cord Company Limited. Simultaneous multiple twisting apparatus. 3,846,965, Cl. 57-58.520.

Matsuo, Takashi: *See—*
Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.

Matsushita Electric Industrial Co., Ltd.: *See—*
Mori, Fumiko, 3,848,105.
Nagaoka, Tadashi, 3,848,263.
Nishimura, Katsutoshi; and Fujisawa, Kiyoji, 3,848,194.
Oka, Shunzo, 3,848,219.

Matsuura, Tadashi, to Ricoh Co., Ltd. Apparatus for the production of recording electrodes of the multiple needle type. 3,847,342, Cl. 249-85.000.

Mattel, Inc.: *See—*
Hill, Allen D.; Bass, Sidney; and Rich, Hubert A., 3,846,933.

Mattina, Charles F.; and Selke, William A., to Kimberly-Clark Corporation. Method of making reconstituted tobacco having reduced nitrates. 3,847,164, Cl. 131-143.000.

Mattis, Weat Carl, to Du Pont de Nemours, E. I., and Company. Process for packaging acrylic fibers. 3,846,955, Cl. 53-24.000.

Mattor, John A., to Scott Paper Company. Diazo photopolymer comprision and article comprising carboxylated resin. 3,847,614, Cl. 96-75.000.

Mattson, John E. Inflating plug. 3,847,412, Cl. 280-150.0ab.

Mattsson, Bertil, to Hea Rehab AB. Wheel fitting device. 3,847,440, Cl. 301-1.000.

Matyschik, Otto, to SKF Industrial Trading and Development Company B.V. Clutch release mechanism. 3,847,258, Cl. 192-98.000.

May & Baker Limited: *See—*
Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.

May, Edwin A.: *See—*
D'Alessandro, Alfred C.; and May, Edwin A., 3,847,151.

May, Walter John: *See—*
Inglish, Sumter R.; and May, Walter John, 3,847,274.

Maynard, Derek J.: *See—*
Quintal, Bertram S.; and Maynard, Derek J., 3,848,153.

Mc Cabe, William C. Automated spectrophotometer apparatus and computer system for simultaneous measurement of a plurality of kinetic reactions. 3,847,486, Cl. 356-205.000.

McBride, Jack C. Fishing pole holder and signaling device. 3,846,929, Cl. 43-17.000.

McCarthy, James R., Jr.: *See—*
Dunbar, Joseph E.; Harris, Robert F.; and McCarthy, James R., Jr., 3,847,927.

McCaulay, David A., to Standard Oil Company. Separation and isomerization of alkyl-substituted aromatic compounds using fluoroalkanesulfonic acids. 3,848,011, Cl. 260-668.00a.

McComb, Kenneth H. Die assembly for foodstuff extruder. 3,847,531, Cl. 425-464.000.

McCormick, Harold E.: *See—*
Prasse, Herbert F.; and McCormick, Harold E., 3,847,518.

McCulloch Corporation: *See—*
Frederickson, Robert Eugene, 3,847,204.

McDonnell Douglas Corporation: *See—*
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McDowell-Wellman Engineering Company: *See—*
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McEvoy Oilfield Equipment Co., mesne: *See—*
Herd, David P., 3,847,215.

McGettigan, Frank J. Frangible buffer apparatus for vehicles. 3,847,426, Cl. 293-1.000.

McGinnis, Floyd H., to Seismograph Service Corporation. Slurry sampler for polymer separation. 3,847,022, Cl. 73-421.000.

McGinniss, Vincent Daniel, to SCM Corporation. UV and laser curing of pigmented polymerizable binders. 3,847,771, Cl. 204-159.240.

McGranghan, Francis R.: *See—*
Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., 3,847,707.

McHugh, Neil M.: *See—*
Brandl, Eugene H.; and McHugh, Neil M., 3,847,622.

McInnes, Robert P. Rooftop tape storage rack. 3,847,316, Cl. 224-42.10c.

McKay, Jerry Bruce, to Du Pont de Nemours, E. I., and Company. False-twist texturing yarn of polyester filaments having multilobal cross sections. 3,846,969, Cl. 57-140.00j.

McKee, James W., to True Data Corporation. Card handling apparatus. 3,847,382, Cl. 271-4.000.

McLaughlin, Lawrence D.: *See—*
Shaw, Donald L.; and McLaughlin, Lawrence D., 3,847,699.

McMillan Electronics Corporation: *See—*
McMillan, Robert D., Jr., 3,848,128.

McMillan, Robert D., Jr., to McMillan Electronics Corporation. Control chamber apparatus for pollutant detectors. 3,848,128, Cl. 250-336.000.

McNair, Samuel L., to Dazey Products Co. Control assembly for bathtub hydrotherapy unit. 3,846,848, Cl. 4-180.000.

McTaggart, George D.: *See—*
Confer, James O.; and McTaggart, George D., 3,848,040.

McVeigh, Harry A.: *See—*
Schwartz, Albert B.; and McVeigh, Harry A., 3,847,793.

McVey, Charles I., to General Electric Company. Ceramic envelope lamp having metal foil inleads. 3,848,151, Cl. 313-217.000.

Medspecs, Inc.: *See—*
Cotey, John; and Poirier, Jean R., 3,847,143.

Mehta, Rustam Jehangir: *See—*
Geilhufe, Michael; and Mehta, Rustam Jehangir, 3,848,237.

Meier, Ernie A.; and Micallef, Alfred M., to K. & M. Rubber Co. Removable oven door gasket and method of making same. 3,847,199, Cl. 156-293.000.

Meier, Henry G.: *See—*
Eberhard, Elmer T.; and Meier, Henry G., 3,848,101.

Meinert, Norbert: *See—*
Broemer, Heinz; and Meinert, Norbert, 3,847,624.

Meiri, Shmuel, to Northwestern University. Apparatus actuating and nurse call system. 3,848,249, Cl. 340-325.000.

Menet, Albert: *See—*
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,848,000.

Mensi, Domenico: *See—*
Sianesi, Dario; Caporiccio, Gerardo; and Mensi, Domenico, 3,847,978.

Mercier, George J. Wall panel disappearing bed. 3,846,852, Cl. 5-10.00r.

Merck & Co., Inc.: *See—*
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.

Merger, Franz: *See—*
Adolphi, Heinrich; Dietsche, Wolfram; Merger, Franz; Beutel, Peter; and Huber, Rolf, 3,847,936.

Merkel, Rudolf: *See—*
Gerner, Heinz; and Merkel, Rudolf, 3,846,941.

Meschonat, Gunter; and Schungel, Peter, to Klockner-Werke AG. Bolt tensioning and nut threading arrangement. 3,847,041, Cl. 81-57.380.

Mesich, Frank G.; Bedford, John A.; and Dougherty, Edward F., to Celanese Corporation. Hydrogenolysis of carboxylic acids with cobalt catalysts. 3,848,003, Cl. 260-635.00d.

Messer, Mayer Naoum: *See—*
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,847,921.

Messerchmitt-Bolkow-Blohm Gesellschaft mit beschrankter Haftung: *See—*
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Messerschmitt-Bolkow-Blohm GmbH: *See—*
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Mesta Machine Company: *See—*
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Meyer, Edward D.: *See—*
Agostino, Salvatore R., Jr., 3,847,404.

Meyer, Monroe W.: *See—*
Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., 3,846,903.

Meyer, Raymond W.; McGranghan, Francis R.; and Evans, Dale K., to General Tire & Rubber Company, The. Laminating apparatus having dual doctor blade. 3,847,707, Cl. 156-436.000.

Meyer, Vincent Edwin. Closure. 3,847,183, Cl. 138-96.00r.

Meyer-Simon, Eugen: *See—*
Broll, Arno; Beyer, Hermann; Mann, Herbert; and Meyer-Simon, Eugen, 3,847,639.

Meyers, Edward F., to Enviro-Gro, Inc. Self-starting plant marker and method and apparatus for making same. 3,846,954, Cl. 53-14.000.

Micallef, Alfred M.: *See—*
Meier, Ernie A.; and Micallef, Alfred M., 3,847,199.

Micallef, Lewis A., to Leeds and Micallef. Retractable turnspout closure. 3,847,313, Cl. 222-507.000.

Michalko, Edward: *See—*
Hilfman, Lee; Pollitzer, Ernest L.; and Michalko, Edward, 3,847,796.

Michaud, Andre Louis: *See—*
Mas, Robert J.; and Michaud, Andre Louis, 3,848,051.

Michels, Albertus Peter Johannes; Gasseling, Franciscus Wilhelmus Engelbert; and Findhammer, Carl Fridriech Johan, to U.S. Philips Corporation. Device for converting thermal energy into mechanical energy. 3,846,985, Cl. 60-521.000.

Micheron, Francois; Nicolas, Jean; and Hildebrandt, Mieczyslax, to Thomson-CSF. Hologram formation within a polycrystalline photo excitable electro-optic plate. 3,847,465, Cl. 350-3.500.

Microsystems International Limited: *See—*
Cosham, Michael A.; and Marx, Dieter O., 3,846,895.

Midwest Research Institute: *See—*
Lavik, Melvin T.; and Hubbell, Ronald D., 3,847,825.

Migdal, Philip N., to Teledyne, Inc. Steerable radar antenna. 3,848,255, Cl. 343-761.000.

Mihailovski, Alexander, to Stauffer Chemical Company. 3,5-Dichlorophenylcarbamyl pyrrolidine. 3,847,939, Cl. 260-326.400.

Mihailovski, Alexander; and Baker, Don R., to Stauffer Chemical Company. Phosphorylated thiourea compositions. 3,847,980, Cl. 260-552.00r.

Mikhailu, Georgy Ivanovich: *See—*
Kozorezov, Konstantin Isaakovich; Semchenko, Vitaly Vasilievich; and Mikhailu, Georgy Ivanovich, 3,848,100.

Miles Laboratories, Inc.: *See—*
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Miller, Arthur F.: *See—*
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Miller, Calvin Lyle: *See—*
Freedy, Allan Leslie; Miller, Calvin Lyle; and Simpson, Fred Eugene, 3,847,451.

Miller, John Herbert. Hand support attachment for a trumpet or like instrument. 3,847,051, Cl. 84-387.000.

Miller, Orville C., to Centenary Central, Inc. Method of producing cutting plates for die cutting operations. 3,847,036, Cl. 76-107.00c.

Miller, Ronald J.: *See—*
Campbell, Curtis M.; and Miller, Ronald J., 3,848,114.

Miller, Thomas Howard: *See—*
Lewis, David Otto; and Miller, Thomas Howard, 3,848,235.

Miller, William H. Gear blanks. 3,847,557, Cl. 29-191.000.

Millington, Raymond J.; and Rexek, John R., to Motorola Inc. Self-compensated amplifier circuit. 3,848,143, Cl. 307-297.000.

Mills, Ivor W.; Dimeler, Glenn R.; Atkinson, William A., Jr.; and Hoffman, James P., to Sun Oil Company of Pennsylvania. Oil for use in printing inks. 3,847,623, Cl. 106-32.000.

Milner, Edward Francis Godfrey: *See—*
Liang, Shou Chu; Milner, Edward Francis Godfrey; Toop, Gerald Wesley; and Anderson, Ronald Walter, 3,847,595.

Milotic, Milio. Transformable footwear. 3,846,919, Cl. 36-2.50w.

Mimino, Tohru; Kinoshita, Kazuhisa; and Hattori, Keisuke, to Nippon Kokan Kabushiki Kaisha. High temperature alloy steel. 3,847,600, Cl. 75-126.00c.

Mine, Kiyomitsu: *See—*
Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.

Minister of National Defence of Her Majesty's Canadian Government: *See—*
Hyne, Graham Everett, 3,848,202.

Minnesota Mining and Manufacturing Company: *See—*
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Koshar, Robert J., 3,847,961.
Krueger, Dennis L., 3,847,821.
Winslow, John M., 3,847,612.

Misson, George W., to PPG Industries, Inc. Method of tempering glass. 3,847,580, Cl. 65-25.00a.

Mistarz, Robert J., to Koehring Company. Enclosure leak tester and method. 3,847,014, Cl. 73-49.300.

Mitchell, William G., to Lykes Pasco Packing Co. Method for manufacture of citrus bioflavonoids. 3,847,899, Cl. 260-236.500.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Asano, Tetsumasa; Soga, Takaaki; and Kitano, Mitsuru, 3,848,169.
Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, 3,847,534.

Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Petrochemical Company Limited: *See—*
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Mitsubishi Reiyon Kabushiki Kaisha: *See—*
Hitomi, Keiichi; Takagi, Kachio; Nomura, Seinosuke; and Okada, Sadayuki, 3,846,970.

Mitsumata, Tadayasu: *See—*
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Miura, Kiyoshi: *See—*
Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, 3,848,117.

Miyagi, Arata: *See—*
Yoshimoto, Toshio; Imamura, Takaaki; Tanaka, Kazuo; and Miyagi, Arata, 3,848,026.

Miyazako, Takushi: *See—*
Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, 3,847,615.

Miyoshi, Takeo; Majima, Kazu; Yamagata, Tetsuo; Harada, Susumu; and Sueishi, Motoharu, to Nippondenso Co., Ltd. and Toyota Jidosha Kogyo Kabushiki Kaisha. Electrical fuel injection system for internal combustion engines. 3,847,130, Cl. 123-179.001.

Mizutani, Toshio: *See—*
Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.

Mo Och Domsjo AB: *See—*
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Mobil Oil Corporation: *See—*
Cushman, Donald R.; Oberright, Edward A.; and Edwards, Roy T., 3,847,641.
Florian, John, 3,847,314.
Schwartz, Albert B.; and McVeigh, Harry A., 3,847,793.

Modebadze, Otar Egorovich. Metal-to-glass joint. 3,847,628, Cl. 106-52.000.

Moder, Hans-Ulrich; and Grossmann, Gunter, to Siemens Aktiengesellschaft. Data processing system having triplexed system units. 3,848,116, Cl. 235-153.0ae.

Modersohn, Dieter: *See—*
Zurek, Rudolf; and Modersohn, Dieter, 3,847,256.

Moeckl, Ernst, to Nixdorf Computer A.G. Data processor. 3,847,461, Cl. 312-281.000.

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Moldovan, Michael T., Jr.; Lindros, Charles J.; Anderson, Lawrence L.; Wescott, Robert D.; and Cusimano, Richard J., to AVM Corporation. Electronic voting machine. 3,847,345, Cl. 235-54.00f.

Molitor, Edwin A.; Elsten, Walter; and Sergent, Enoch A., to Multifold-International, Inc., mesne. Machine for loading a stack of articles in a carton. 3,846,961, Cl. 53-250.000.

Moll, Franz: *See—*
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Molyneux, David J., to Brown & Williamson Tobacco Corporation. Method of making a tobacco extract. 3,847,163, Cl. 131-143.000.

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Monson, Franklin A.; and Mueller, Kenneth E., to AAI Corporation. Method of making an underwater projectile. 3,846,878, Cl. 29-1.200.

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Moore, Raymond H., to United States of America, Atomic Energy Commission. Recovery of fission-produced technetium, palladium, rhodium and ruthenium. 3,848,048, Cl. 423-22.000.

Moore, Robert L.: *See—*
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Moore, Roger E.: *See—*
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Morcaldi D', Rosaria Forlano. Fabric construction guide. 3,847,052, Cl. 87-31.000.

Morfit, Oliver: *See—*
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Morgan Refractories Limited: *See—*
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Morgenstern, David. Filtered cigarettes. 3,847,161, Cl. 131-10.300.

Mori, Fumiko, to Matsushita Electric Industrial Co., Ltd. Cooking time adjusting arrangement for use in electronic oven. 3,848,105, Cl. 219-10.550.

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Morita, Tomijiro: *See—*
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Morkoski, James; and Garriott, Louis B., Jr., to International Harvester Company. Power adjustable tractor wheels. 3,847,441, Cl. 301-9.0tv.

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Morrison, Jimmie H. Motor mounting bracket. 3,847,330, Cl. 248-14.000.

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Moss, James R., to Bendix Corporation, The. Device for printing coded labels and the like. 3,848,257, Cl. 346-49.000.

Moss, Philip Hotchkiss, to Jefferson Chemical Company, Inc. Partially aminated polyoxyalkylene polyols. 3,847,992, Cl. 260-584.00b.

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Munters, Carl Georg. Apparatus for drying compressed air. 3,847,578, Cl. 55-390.000.

Murai, Yasuro. Hanger for dust bag. 3,847,332, Cl. 248-99.000.

Murakami, Yoichi; and Watanabe, Hikaru, to Dainippon Ink and Chemicals, Inc. Polyurethane composition based on epoxide-modified linear polyester. 3,847,874, Cl. 260-77.5an.

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Naka, Hiromitsu. Indoor escape device. 3,847,247, Cl. 182-81.000.
Nakagawa, Tadashi: *See*—
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National Steel Corporation: *See*—
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Nelson, Roy A., to LTV Aerospace Corporation. Vehicle drive means. 3,847,089, Cl. 104-148.0lm.
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Nielinger, Werner; Rudolph, Hans; Dhein, Rolf; and Schneider, Kurt, to Bayer Aktiengesellschaft. Transparent, thermoplastically formable copolyamides from bis-(4-aminocyclohexyl)methane-aromatic dicarboxylic acid-E,caprolactam. 3,847,877, Cl. 260-78.001.
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Nielsen, Harold R. Cantilevered booth construction. 3,847,431, Cl. 297-158.000.
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Nomaguchi, Tamotsu; Sakai, Masatada; and Ito, Toshio, to Mitsubishi Denki Kabushiki Kaisha. Combustion apparatus. 3,847,534, Cl. 431-329.000.

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Northwood, James Edward, to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of casting a directionally solidified article having a varied composition. 3,847,203, I. 164-60.000.

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Nowak, Edmund, to Przedsiebiorstwo Dawiadczalne Pras Automatycznych i Tiocznikon "Ponar-Hydomat". Power system for multi-pressure hydraulic press. 3,847,074, Cl. 100-209.000.

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Oberdank, Jack O., to Wayne Manufacturing Company. Street sweeper filter shaker system. 3,847,576, Cl. 55-283.000.

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Ohno, Nobuo; Itaya, Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, to Sumitomo Chemical Company, Limited. Propenylcyclopropanecarboxylates. 3,847,944, Cl. 260-332.20r.

Oka, Shunzo, to Matsushita Electric Industrial Co., Ltd. Variable resistor. 3,848,219, Cl. 338-119.000.

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Okamoto, Toshaiaki; Inada, Masammi; and Nishida, Koji, to Aisin Seiki Company Limited and Sharp Kabushiki Kaisha (Sharp Corporation). Apparatus for antiskid control of a hydraulic brake system. 3,847,448, Cl. 303-21.0be.

Okawa, Isao, to Asahi Kaser Kogyo Kabushiki Kaisha. Sound insulating block. 3,846,949, Cl. 52-438.000.

Okazaki Manufacturing Company Limited: *See*—
Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, 3,847,787.

Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, to Okazaki Manufacturing Company Limited. Device for supplying drinking water. 3,847,787, Cl. 204-301.000.

Okazaki, Toshio: *See*—
Okazaki, Tatsuo; Okazaki, Toshio; Karasawa, Nobuko; and Arai, Masako, 3,847,787.

Okuno, Yositosi: *See*—
Ohno, Nobuo; Itaya,. Nobushige; Mizutani, Toshio; Kitamura, Shigeyoshi; Matsuo, Takashi; and Okuno, Yositosi, 3,847,944.

Oleszeko, Thaddeus J.; and Groschel, Walter H. Air diffusion in rotary hearth calciner. 3,847,752, Cl. 201-32.000.

Olin Corporation: *See*—
Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., 3,847,844.

Olinkraft, Inc.: *See*—
Powers, Thomas J.; and Jones, Shelton J., 3,847,724.

Oliver, John M., to PPG Industries, Inc. Recovery of glycols from mixed glycol compositions by distillation with acid treatment. 3,847,754, Cl. 203-34.000.

Oliver Tom's Catering Equipment Limited: *See*—
Booker, William J. W., 3,847,134.

Olivero, Carlo. Pre-wired switch box. 3,848,224, Cl. 339-198.00e.

Olivetti, Ing. C., & C., S.p.A.: *See*—
Repetti, Renato, 3,847,462.

Ollendorf, Stanford, to United States of America, National Aeronautics and Space Administration. Structural heat pipe. 3,847,208, Cl. 165-1.000.

Olsen, Ole Jentoft: *See*—
Madsen, Rud Frik; Olsen, Ole Jentoft; and Stenseng, Mogens Martin, 3,847,818.

Olsen, Severt E.: *See*—
Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., 3,848,174.

Olsen, Willi; and Schlosser, Klaus, to Siemens Aktiengesellschaft. Hollow high-voltage electric insulator. 3,848,081, Cl. 174-209.000.

Olstowski, Franciszek, to Dow Chemical Company, The. Rapid-setting polyurethanes containing substituted hydroxyl-containing aromatic compounds as modifiers. 3,847,859, Cl. 260-33.4ur.

Olympia Werke AG: *See*—
Rittberg, Eilt-Heyo, 3,848,118.

Omnitext, Inc.: *See*—
Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.

Omori, Akira: *See*—
Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, 3,847,842.

Onda, Eiichi; Koyama, Mitsuo; and Nakagawa, Tadashi, to Seiko Koki Kabushiki Kaisha. Shutter assembly having means for preventing rebounding of the shutter blades. 3,847,476, Cl. 354-252.000.

Onitsuka Co., Ltd.: *See*—
Kobayashi, Kazutoshi, 3,846,921.

Onozuka, Mitsuo; Nomoto, Koki; Iida, Kinji; and Morita, Tomijiro, to Kureha Kagaku Kogyo Kabushiki Kaisha. Method for producing calcium sulfite semihydrate. 3,848,070, Cl. 423-512.000.

Onsager, Olav T., to Halcon International Inc. Preparation of polyamides by polymerization of a dinitrile a diamine and water in the presence of controlled amounts of ammonia. 3,847,876, Cl. 260-78.00r.

Optical Business Machines, Inc.: *See*—
MacNeill, John H., 3,848,228.

Opticase, Inc.: *See*—
Nathan, Emanuel, 3,846,872.

Ortner, Lorenz; Heinzelmann, Karl-Georg; Conrad, Bernd; and Dierker, Joachim, to Siemens Aktiengesellschaft. Process for making light conducting plates. 3,847,696, Cl. 156-154.000.

Orvis, Gary W., to Du Pont de Nemours, E. I., and Company. Process for preparing pigmented acrylic dispersion lacquer coating compositions by using cellulose acetate butyrate resin. 3,847,847, Cl. 260-17.00r.

Osse, Peter: *See*—
Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.

Ost, Walter; Thomas, Klaus; and Jerchel, Dietrich, to Boehringer, C. H., Sohn. 1,1,1-Trichloro-2-amido-2-piperazino-ethanes and salts thereof. 3,847,922, Cl. 260-268.00r.

Ostrop, Berthold: *See*—
Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.

Oswitch, Stanley; and Kipp, Kevin K., to Ferro Corporation. Prefabricated gel coats. 3,848,045, Cl. 264-255.000.

Otani, Susumu: *See*—
Araki, Hidejiro; Katoh, Takashi; and Otani, Susumu, 3,846,870.

Otsap, Ben A.: *See*—
Boyadjieff, George I.; and Otsap, Ben A., 3,847,216.

Boyadjieff, George I.; and Otsap, Ben A., 3,847,218.

Otte, Richard F., to Raychem Corporation. Capacitive electrical connectors. 3,848,164, Cl. 317-256.000.

Owens-Corning Fiberglas Corporation: *See—*
Crimmel, Harry W.; Terezakis, Emanuel G.; and Sutula, Phyllis A., 3,847,655.
Erickson, Thomas D.; and Wolf, Warren W., 3,847,626.
Erickson, Thomas D.; and Wolf, Warren W., 3,847,627.
Fulk, Walter F.; and Lyle, Phra D., 3,847,579.

Owens-Illinois, Inc.: *See—*
Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., 3,847,581.

Oxy Metal Finishing Corporation: *See—*
Murphy, Donald P.; and Valatka, Henry, 3,847,839.

Ozaki, Hachiro: *See—*
Shiio, Isamu; Ozaki, Hachiro; and Nakamatsu, Tsuyoshi, 3,847,744.

Pacific Technica Corporation: *See—*
Feldmann, Fritz, 3,847,082.

Paczkowski, Michael M., to Nanaimo Enviro Systems Corporation. Emmission control process and system. 3,846,981, Cl. 60-286.000.

Page, Arthur Lewis John. Apparatus for making compost. 3,847,299, Cl. 220-4.00f.

Page, Ralph E., Jr.: *See—*
Statman, Max; and Page, Ralph E., Jr., 3,847,756.

Pages Holding S.A.: *See—*
Lambertoni, Oreste, 3,847,137.

Pain, David Lord: *See—*
Knowles, Philip; Marshall, Stuart Malcolm; Pain, David Lord; and Wooldridge, Kenneth Robert Harry, 3,847,919.

Pallos, Ferenc Marcus, to Stauffer Chemical Company. Certain nonterpenoid juvenile hormone mimicking compounds. 3,847,970, Cl. 260-482.00p.

Palmer, Nigel Innes; Sugarman, Nathan; and Grammer, Don O'Neil, to Grace, W. R., & Company. Battery separator manufacturing process. 3,847,676, Cl. 136-148.000.

Palotsee, John J. Gasoline vaporizer apparatus. 3,847,128, Cl. 123-141.000.

Paraskevas, Dimitri; L'Hermite, Alain A.; Bernard, Georges F.; and Guinet, Jacques E., to Centre Technique des Industries Mecaniques. Photoelastic processes for examining mechanical stresses. 3,847,481, Cl. 356-34.000.

Parenti, Frank V.; and Staneck, Robert W., to Standard Register Company, The. Burster apparatus. 3,847,318, Cl. 225-100.000.

Park, Robert H., to Fast Load Control Inc. Method of effecting fast turbine valving for improvement of power system stability. 3,848,138, Cl. 290-40.000.

Park-Ohio Industries, Inc.: *See—*
Lewis, John C., 3,848,107.

Parke, Davis & Company: *See—*
Creger, Paul L.; and Neuklis, Winifred A., 3,847,994.

Parker, Louis W.: *See—*
Jamieson, Joseph, 3,848,166.

Parker, William Andrew; and Kryder, Robert A., to RCA Corporation. Automatic brightness control for image intensifier tube. 3,848,123, Cl. 250-213.0vt.

Parker-Hannifin Corporation: *See—*
Eschbaugh, John T.; and Mooney, David N., 3,847,421.

Parks, Christ F.: *See—*
Eilers, Louis H.; and Parks, Christ F., 3,847,858.

Parlin, David B.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.

Parrish, Douglas R.; and Parrish, Richard A., to Parrish's Cake Decorating Supplies, Inc. Universal coupler for cake icing decorating tubes. 3,847,523, Cl. 425-191.000.

Parrish, Richard A.: *See—*
Parrish, Douglas R.; and Parrish, Richard A., 3,847,523.

Parrish's Cake Decorating Supplies, Inc.: *See—*
Parrish, Douglas R.; and Parrish, Richard A., 3,847,523.

Parsons, Stuart L.; and Kloth, James Albert, to AMP Incorporated. Method and tool for preparing three conductor-cable for electrical fixture. 3,846,894, Cl. 29-203.00h.

Pasqualucci, Carmine: *See—*
Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, 3,847,903.

Pasternak, Israel S.; Dugan, John J.; and Higgins, James P., to Exxon Research and Engineering Company. Visbreaking a heavy hydrocarbon feedstock in a regenerable molten medium. 3,847,797, Cl. 208-114.000.

Patel, Kanu I.; and Reiss, Carroll R., to Redken Laboratories, Inc. Acidic permanent waving solution and process for its use. 3,847,165, Cl. 132-7.000.

Paterniti, Sam C., to Union Carbide Corporation. Reduced mercury containing zinc alkaline cells. 3,847,669, Cl. 136-30.000.

Patrick, John; and Durmann, George J. Window shade and curtain brackets and mounting means therefor. 3,847,337, Cl. 248-252.000.

Pattee, Warren K. Universal adaptor and disconnect for accessory ignition. 3,847,464, Cl. 339-31.00r.

Patten, Dan H., Jr. Pickup mechanism. 3,847,267, Cl. 198-20.00r.

Patterson, John A.: *See—*
Sheehan, Richard W.; Parlin, David B.; Jamrogowicz, Harry F.; and Patterson, John A., 3,846,968.

Patterson, John W.; and Fried, John H., to Syntex (U.S.A.) Inc., mesne. Prostaglandins and process and intermediates therefor. 3,847,962, Cl. 260-448.80r.

Paul, Donald G., to Chromalytics Corporation. Method and system for thermal analysis. 3,847,546, Cl. 23-230.0pc.

Paul, Phillip T.: *See—*
Kindle, Robert W.; Barnhart, Robert R.; and Paul, Phillip T., 3,847,727.

Paulik, Frank E., to Monsanto Company. Method for producing hydrogen iodide. 3,848,065, Cl. 423-487.000.

Paull, David, to Swiss Aluminium Ltd., mesne. On site method of erecting a wall structure and a weather gasket joint. 3,846,951, Cl. 52-741.000.

Paulucci, Jeno F.; d/b/a Paulucci, Jeno F., Enterprises: *See—*
Guibert, Raul, 3,847,069.

PB Chemicals Limited: *See—*
Coulter, Michael Oliver; and Bell, David, 3,847,598.

Peacock, George Brandwood; and Dobson, Austin, to Platt International Limited. Twisting of textile filaments. 3,846,966, Cl. 57-77.400.

Pearce, Arthur W. Spreading and end spill dump trailer. 3,847,405, Cl. 280-34.00a.

Peavy, Patrick L.: *See—*
Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.

Pechard, Lucien Leon, to Bunker Ramo Corporation. Connector for printed circuit boards. 3,848,223, Cl. 339-176.0mp.

Pedersen, Bjarne Skinhoj: *See—*
Weis, Jon; and Pedersen, Bjarne Skinhoj, 3,848,002.

Pedersen, Charles John; and Bromels, Marilyn H., to Du Pont de Nemours, E. I., and Company. Macrocyclic hetero imine complexing agents. 3,847,949, Cl. 260-340.300.

Pedigo, Richard A. Grass clipping compacter attachment for lawnmowers. 3,846,963, Cl. 56-13.300.

Peeso, James Bruce, Jr., to American Cyanamid Company. Dewatering acrylonitrile polymers. 3,847,885, Cl. 260-85.50r.

Peeters, Hugo Karel: *See—*
Laridon, Urbain Leopold; Delzenne, Gerard Albert; and Peeters, Hugo Karel, 3,847,610.

Pegler, John Owen Michael; and Mapes, Brian Edward George, to Lloyd, Richard, Limited. Milling cutters. 3,847,555, Cl. 29-105.00r.

Pelteson, Frank M.: *See—*
Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.

Pennwalt Corporation: *See—*
Morris, David E.; and Smith, Francis R., 3,847,981.

Pensky, Jack: *See—*
Green, Allan M.; and Pensky, Jack, 3,847,890.

Pepper, Kenneth V., to Genova Products. Plumbing fitting. 3,846,851, Cl. 4-252.00r.

Perconti, Thomas J.: *See—*
Brandon, Kenneth F.; and Perconti, Thomas J., 3,847,319.

Perel, Julius: *See—*
Mahoney, John F.; and Perel, Julius, 3,848,258.

Peresypkin, Alexei Vasilievich: *See—*
Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.

Perez, George R., to AMF Incorporated. High capacity underwater acoustic release. 3,848,226, Cl. 340-5.00r.

Perreault, Donald A., to Xerox Corporation and Teledyne Casting. Semi-encoded fascimile transmission. 3,847,732, Cl. 178-6.000.

Perron, Robert R.; and Fowler, John T., to Little, Arthur D., Inc. Electronic lock system. 3,848,229, Cl. 340-149.00a.

Perrotti, Emilio: *See—*
Santambrogio, Alberto; and Perrotti, Emilio, 3,847,902.

Perry, Dean A. Valve with elliptical sealing. 3,846,885, Cl. 29-157.10r.

Perry, Reginald P.; and Sjoberg, Nils W., to Prime Manufacturing Company. Sewing rib. 3,846,920, Cl. 36-22.00a.

Peska, Lawrence, Associates, Inc.: *See—*
Waters, Lyle E., 3,847,300.

Peter, Lothar: *See—*
Peter, Oskar E.; and Peter, Lothar, 3,847,493.
Peter, Oskar E.; and Peter, Lothar, 3,847,495.

Peter, Oskar E.: *See—*
Peter, Oskar E.; and Peter, Lothar (said Peter, Lothar assor. to said), 3,847,493.
Peter, Oskar E.; and Peter, Lothar, 3,847,495.

Peter, Oskar E.; and Peter, Lothar, said Peter, Lothar assor. to said Peter, Oskar E. Double conical hub-to-shaft connection. 3,847,493, Cl. 403-370.000.

Peter, Oskar E.; and Peter, Lothar, to Peter, Oskar E. Symmetrical hub-to-shaft connection. 3,847,495, Cl. 403-370.000.

Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., to Owens-Illinois, Inc. Glassmaking diameter sensing. 3,847,581, Cl. 65-29.000.

Peterson, Charles J. Convertible backpack and cot apparatus. 3,846,855, Cl. 5-114.000.

Peterson, Wayne A.: *See—*
Beck, Henry E.; and Peterson, Wayne A., 3,847,059.
Hicks, Leon E.; Grant, John W.; Watts, Loyal O.; and Peterson, Wayne A., 3,847,416.

Petrolite Corporation: *See*—
Jarrell, William Grant, 3,847,774.

Peuchmaur, Alphonse, to Commissariat a l'Energie Atomique. Device for providing heat insulation at high temperature. 3,847,148, Cl. 138-178.000.

Pfaff Industriemaschinen GmbH: *See*—
Albrecht, Ernst; and Hubele, Klaus, 3,847,096.

Pfaff Industriemaschinen G.m.b.H., Firma: *See*—
Braun, Oskar, 3,847,099.

PFAFF Industriemashiener G.m.b.H.: *See*—
Dusch, Albert; and Hintzen, Peter, 3,847,097.

Pfeefer, Philip E.: *See*—
Silbert, Leonard S.; Pfeefer, Philip E.; and Konen, Dolores A., 3,847,956.

Pfefferle, William C., to Engelhard Minerals & Chemicals Corporation. Two stage combustion process. 3,846,979, Cl. 60-39.040.

Pfizer, Inc.: *See*—
Cronin, Timothy H., 3,847,900.

Pfjcha, Ivan. Translational motion apparatus. 3,847,454, Cl. 308-62.000.

Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, to Agfa-Gevaert. Process of preparing fine-grain silver halide emulsions. 3,847,617, Cl. 96-94.00r.

Phillips Cable Limited: *See*—
Forester, Glen Robert, 3,847,190.

Phillips Fibers Corporation: *See*—
Su, Tsung-Yuan, 3,847,554.

Phillips, Jack C.; and Bennett, Donald E., to United States of America, Navy. Control surface deployment mechanism. 3,847,369, Cl. 244-42.00r.

Phillips Petroleum Company: *See*—
Allen, James D., 3,847,997.
Bates, Bruce L., 3,846,993.
Erickson, Wayne K., 3,846,881.
Farfaglia, Silvio T.; and Bock, Ronald E., 3,847,540.
Johnson, Marvin M.; and Tabler, Donald C., 3,847,946.
Myers, John W., 3,848,019.
Schorno, Karl S., 3,847,549.
Seefluth, Charles L., 3,848,036.

Picker Corporation: *See*—
Foderaro, Anthony J., 3,848,132.

Pierce, Ogden R.: *See*—
Kim, Yung Ki; and Pierce, Ogden R., 3,847,916.

Pierle, Willy R. J.: *See*—
Keijzer, Johan H.; Pierle, Willy R. J.; and Van de Voorde, G., 3,847,410.

Pike, John E.: *See*—
Lincoln, Frank H., Jr.; Pike, John E.; and Youngdale, Gilbert A., 3,847,967.

Pike, John E., to Upjohn Company, The. Prostagland E_1 F_1 and A_1 analogs. 3,847,966, Cl. 260-468.00d.

Pilgram, Kurt H.; and Skiles, Richard D., to Shell Oil Company. Thiazoles herbicidal. 3,847,588, Cl. 71-90.000.

Pim, Norman L., to Gulf-Western Manufacturing Company. Balance bar for handling wrapper rolls of a strip coiling machine. 3,847,429, Cl. 294-67.0aa.

Pinel, John Fowler, to Bell-Northern Research Ltd. Telephone hybrid transformer balance network. 3,848,098, Cl. 179-170.00d.

Pines, Seemon H.: *See*—
Karady, Sandor; Pines, Seemon H.; Ly, Manuel G.; and Sletzinger, Meyer, 3,847,969.

Pinson, John C.: *See*—
Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.

Pitney-Bowes, Inc.: *See*—
Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.

Pitt, W. Wilson, Jr.: *See*—
Scott, Charles D.; and Pitt, W. Wilson, Jr., 3,847,550.

Platt International Limited: *See*—
Peacock, George Brandwood; and Dobson, Austin, 3,846,966.

Platz, Rolf; Nagel, Otto; and Fuchs, Werner, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Exothermic catalytic hydrogenation of organic compounds in a liquid reaction medium. 3,847,989, Cl. 260-570.900.

Platzke, Ronald N.: *See*—
Carey, Curtis D.; and Platzke, Ronald N., 3,848,069.

Plumhans, Leon Paul Jean, to Uniroyal A.G. Segmental mold. 3,847,520, Cl. 425-47.000.

Podolor, Donald E.: *See*—
Block, Marshall H.; Hubbard, Gerald L.; and Podolor, Donald E., 3,846,931.

Poffenberger, James C., to Preformed Line Products Company. Appliance for linear bodies. 3,847,491, Cl. 403-209.000.

Pohlmeyer, Wilhelm: *See*—
Becher, Wilfried; Massonne, Joachim; and Pohlmeyer, Wilhelm, 3,848,064.

Poirier, Jean R.: *See*—
Cotey, John; and Poirier, Jean R., 3,847,143.

Polak, Roger J.: *See*—
Fuzesi, Stephen; Lapkin, Milton; and Polak, Roger J., 3,847,844.

Polkekowski, Helmut: *See*—
Huttenbrauck, Herbert; Ostrop, Berthold; Soliman, Mustafa; and Polkekowski, Helmut, 3,847,438.

Pollack, Jerry J.: *See*—
Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., 3,848,135.

Pollet, Robert Joseph: *See*—
Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.

Pollitzer, Ernest L.: *See*—
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Pollkotter, Gunter: *See*—
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Polysius AG: *See*—
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Poncet, Pierre; and Trempu, Rene, to Compagnie Industrielle des Telecommunications Cit-Alcatel. Purification of gaseous streams containing sulfur derivatives. 3,848,058, Cl. 423-242.000.

Poncy, George W., to Johnson & Johnson, mesne. Sterile package for clinical thermometers and the like and method of making it. 3,847,280, Cl. 206-306.000.

Pope, William T. Qualitative RF output-reflected power indicator. 3,848,189, Cl. 324-95.000.

Porath, Jerker Olof: *See*—
Axen, Rolf; Vretblad, Per; and Porath, Jerker Olof, 3,847,745.
Fryklund, Linda; and Porath, Jerker Olof, 3,847,889.

Porret, Daniel: *See*—
Garratt, Peter Garth; Habermeier, Juergen; Porret, Daniel; Leumann, Ernst; and Zuppinger, Paul, 3,847,769.

Potter, Robert Louis: *See*—
Chase, John Donald; and Potter, Robert Louis, 3,847,864.

Powers, John Glenn: *See*—
Bussey, Robert William; and Powers, John Glenn, 3,848,207.

Powers, Thomas J.; and Jones, Shelton J., to Olinkraft, Inc. Nonblocking foamed polymeric laminate and method. 3,847,724, Cl. 161-161.000.

Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich. Radioactive radiation detection system. 3,848,131, Cl. 250-388.000.

PPG Industries, Inc.: *See*—
Houser, Lloyd; and Jeffries, William G., 3,847,584.
Misson, George W., 3,847,580.
Oliver, John M., 3,847,754.
Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., 3,847,586.
Steiger, Roger A.; and Wilson, William L., 3,848,062.
Strain, Franklin, 3,847,762.

Prasse, Herbert F.; and McCormick, Harold E., to Ramsey Corporation. Polyimide high-temperature resistant plastic sealing element. 3,847,518, Cl. 418-122.000.

Prats, Michael: *See*—
Wang, Kuo H.; Prats, Michael; and Campbell, Don A., 3,847,219.

Preformed Line Products Company: *See*—
Poffenberger, James C., 3,847,491.

Preiswerk, Martin: *See*—
Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,847,960.

Presser, Adolph, to United States of America, Navy. Turnable solid state local oscillator. 3,848,201, Cl. 331-76.000.

Preston, Marvin, IV: *See*—
Leibler, Jerome E.; Bloch, Carl J.; Preston, Marvin, IV; and Weiser, Mark D., 3,848,232.

Prestridge, Floyd L., to Combustion Engineering, Inc. Process for electrical coalescing of water. 3,847,775, Cl. 204-191.000.

Price, George D. Game apparatus with a pair of board members and playing pieces. 3,847,397, Cl. 273-131.0ad.

Prichard, Robert A. Spinner for applying designs to fabrics. 3,847,116, Cl. 118-52.000.

Prime Manufacturing Company: *See*—
Perry, Reginald P.; and Sjoberg, Nils W., 3,846,920.

Probe Rite, Inc.: *See*—
Ardezzone, Frank J.; and Silverstein, Milton M., 3,848,188.

Procter & Gamble Company, The: *See*—
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Propper Manufacturing Co., Inc.: *See*—
Inglish, Sumter R.; and May, Walter John, 3,847,274.

Prouty, Robert E.; and Smith, James J., to Essex International, Inc. Electromagnetic solenoid with improved contact antibounce means. 3,848,206, Cl. 335-193.000.

Przedsiebiorstwo Dawiadczalne Pras Automatycznych i Tiocznikon "-Ponar-Hydomat": *See*—
Nowak, Edmund, 3,847,074.

Przybyla, Franciszek, to Mallory Battery Company of Canada Limited. Porous cadmium anode and a method of forming it, and a primary cell using the anode. 3,847,784, Cl. 204-292.000.

Puidak, Heino, to Magnaflux Corporation. Eddy current testing system having concentric coils, one being movable for balancing. 3,848,183, Cl. 324-40.000.

Puls, Walter: *See*—
Brandenburg, Dietrich; and Puls, Walter, 3,847,893.

Purchas, Derek Bernard. Filtering apparatus. 3,847,820, Cl. 210-457.000.

Putz, Joachim, to Edeleanu Gesellschaft mbH. Two stage urea dewaxing process. 3,847,790, Cl. 208-25.000.

Quality Engineered Specialty Products, Inc.: *See—*
Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, 3,847,317.

Quinlan, Joseph B.; and Darrah, Arthur F., to United States of America, Army. Ammunition. 3,847,081, Cl. 102-38.000.

Quint, Henry J., to Rapistan Incorporated. Method and apparatus for removing filaments from the axle of a caster. 3,847,665, Cl. 134-6.000.

Quintal, Bertram S.; and Maynard, Derek J., to Energy Sciences Inc. Elongated electron-emission cathode assembly and method. 3,848,153, Cl. 313-346.000.

Quynn, Richard G., to Burlington Industries, Inc. Barre reduction process. 3,847,544, Cl. 8-178.000.

Rabe, George B., to Thiokol Chemical Corporation. Rolling diaphragm for expelling liquid from tapered tanks. 3,847,310, Cl. 222-386.500.

Race, Andras, 54% to Litvin, Robert L. and 46% to Marino, Louis L. Building material for modular construction. 3,847,633, Cl. 106-98.000.

Radiation Dynamics, Inc.: *See—*
Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., 3,848,174.

Radlmann, Edward; and Nischk, Gunther, to Bayer Aktiengesellschaft. Acrylonitrile (co) polymers containing antistatic agents. 3,847,884, Cl. 260-85.50r.

Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., to Continental Can Company, Inc. Photopolymerizable compositions prepared from beta hydroxy esters and polyitaconates. 3,847,770, Cl. 204-159.230.

Radscheit, Kurt; Stache, Ulrich; and Brodersen, Richard, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Process for the manufacture of β-(3-oxo-7α-acetylthio-17β-hydroxy-4-androsten-17α -yl)-propionic acid γ-lactone. 3,847,906, Cl. 260-239.55c.

Radutsky, Grigory Avramovich: *See—*
Anikanov, Nikolai Ivanovich; Grachev, Leonid Pavlovich; Zax, Grigory Iosifovich; Radutsky, Grigory Avramovich; and Kheifets, Rafail Efimovich, 3,847,272.

Radwill, Robert P.: *See—*
Love, Robert B.; and Radwill, Robert P., 3,847,090.

Raevsky, Georgy Vladimirovich. Pipeline for use under conditions of considerable variations in temperature. 3,847,185, Cl. 138-122.000.

Rafe, Samuel Joseph; Burruss, Robert Page, Jr.; Lebow, Stanley Morris; and Callahan, Stephen Phillips, to Quality Engineered Specialty Products, Inc. Automobile bicycle rack. 3,847,317, Cl. 224-42.03b.

Ralston Purina Company: *See—*
Dunn, Howard J.; and Farr, M. Paul, 3,847,897.

Ramacciotti, Aldo; and Eminian, Giancarlo, to Centro Sperimentale Metallurgico S.p.A. Process for refining metals, in particular liquid pig iron, in oxygen converters with continuous control of the operative procedure. 3,847,593, Cl. 75-60.000.

Ramsey Corporation: *See—*
Prasse, Herbert F.; and McCormick, Harold E., 3,847,518.

Randell, Donald Richard; and Smith, Malcolm John, to Ciba-Geigy Corporation. Hydroxyaryl-tetramenthyl-dehydropiperidines. 3,847,930, Cl. 260-297.00r.

Ranger, Robel: *See—*
Gervais, Edouard; Chollet, Pierre; and Ranger, Robel, 3,847,556.

Rapistan Incorporated: *See—*
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Ratschmeier, Dieter; Stark, Reinhard; and Wenk, Jurgen, to Siemens Aktiengesellschaft. Arrangement for generating a clock frequency signal for recording information on a data carrier. 3,848,167, Cl. 318-254.000.

Rausch, Richard E., to Universal Oil Products Company. Sulfur-free reforming with a platinum-tin catalyst. 3,847,794, Cl. 208-88.000.

Ravenhall, Arthur S., to Dunlop Limited. Pneumatic tires. 3,847,698, Cl. 152-209.00r.

Ravve, Abraham: *See—*
Radlowe, Sol B.; Ravve, Abraham; and Brown, Kenneth H., 3,847,770.

Ray, Robert L., to Dayco Corporation. Endless power transmission belt and method of making same. 3,847,029, Cl. 74-233.000.

Raychem Corporation: *See—*
Evans, Joseph H., 3,847,721.
Otte, Richard F., 3,848,164.

Raymont, William R. Golf club with unit-cell head construction. 3,847,399, Cl. 273-167.00f.

Raytheon Company: *See—*
Dench, Edward C., 3,848,038.
Toledo, Emil, 3,847,759.

Razdan, Raj Kumar; and Thompson, William R., to Beecham Group Limited, mesne. Certain ethers, esters or non-toxic acid addition salt derivatives of 2,2-di- and 2,2,3-tri-lower alkyl chroman- and chromen-ols. 3,847,928, Cl. 260-295.00f.

RCA Corporation: *See—*
Anderson, Leonard Hugo, 3,848,191.
Carrell, Ross Michael, 3,848,087.
DeBrecht, Robert Eugene; and Napoli, Louis Sebastian, 3,848,198.
Kaiser, Donald Bernard, 3,847,703.
Kawamoto, Hirohisa; Allen, Elmer Lawrence, Jr.; and Weisbrod, Sherman, 3,848,196.
Logemann, Hugo, Jr.; and Dion, Donald Francis, 3,847,394.
Parker, William Andrew; and Kryder, Robert A., 3,848,123.
Rodda, William E.; and Dorsey, Denis Peter, 3,848,084.
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Reed, Samuel F., Jr.: *See—*
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Stevens, Travis E.; and Reed, Samuel F., Jr., 3,847,958.

Reed Tool Company: *See—*
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Reese, Franklin S.: *See—*
Draugelis, Vaidevutis C.; Reese, Franklin S.; and Wagner, John W., 3,848,204.

Reese, Thomas J.; Claassen, George R.; and Tobin, Melvin W., to PPG Industries, Inc. Apparatus for bending glass sheets to sharp curvatures. 3,847,586, Cl. 55-290.000.

Regie Nationale des Usines Renault: *See—*
Roger, Yves, 3,847,056.

Rehm, John F.; and Lloyd, Evan E. M., to Singer Company, The. Information transmission system. 3,848,230, Cl. 340-163.000.

Reichhold-Albert Chemie Aktiengesellschaft: *See—*
Becker, Wilhelm; Osse, Peter; Gutte, Richard; and Hochbach, Friedrich, 3,847,726.

Reid, Jay H., to Sears, Roebuck and Co. Tote box attachment for suburban type tractor. 3,847,436, Cl. 298-1.00c.

Reid, William M. Low temperature natural gas transmission. 3,846,994, Cl. 62-87.000.

Reim, Thomas E.; Pollack, Jerry J.; and Kemmerling, Robert A., to Republic Steel Corporation. Radiation source holder. 3,848,135, Cl. 250-496.000.

Reinehr, Ulrich: *See—*
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Reinhall, Rolf Bertil. Device in grinding apparatus for vegetable or fibrous material. 3,847,363, Cl. 241-245.000.

Reisman, Jack L. Lens processing apparatus. 3,846,889, Cl. 29-200.00d.

Reiss, Carroll R.: *See—*
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Reissmueller, Karl H.: *See—*
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Renn, Charles F.: *See—*
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Repetti, Renato, to Olivetti, Ing. C., & C., S.p.A. Sliding drawer for tables and office desks. 3,847,462, Cl. 312-330.000.

Republic Steel Corporation: *See—*
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Rewop Company: *See—*
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Rexnord, Inc.: *See—*
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Reynolds, Blake: *See—*
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Reznik, Barry David, to DeWiant Corporation. Erosion resistant composites. 3,847,559, Cl. 29-195.000.

Rheinstahl Aktiengesellschaft: *See—*
Ubelacker, Erich, 3,847,053.

Rhodes, Warren L., to Xerox Corporation. Method for transferring electrostatographically formed images. 3,847,642, Cl. 117-17.500.

Rhone-Poulenc S.A.: *See—*
Boesch, Roger, 3,847,987.
Bouchaudon, Jean; Vourat, Guy; and Margrafe, Rodolphe, 3,847,868.
Chabardes, Pierre; Julia, Marc; and Menet, Albert, 3,848,000.
Cotrel, Claude; Jeanmart, Claude; and Messer, Mayer Naoum, 3,847,921.

Rhone-Progil: *See—*
Chanel, Rene; Alexandre, Bernard; Leroi, Jean-Claude; and Billion, Jacques, 3,847,755.

Rice, Dale W., to Corning Glass Works. Method for producing metal compounds. 3,848,068, Cl. 423-335.000.

Rich, Hubert A.: *See—*
Hill, Allen D.; Bass, Sidney; and Rich, Hubert A., 3,846,933.

Richards, James C.; and Trescott, Edward B. Addition of sulfur to alkyldihalogenphosphine. 3,847,979, Cl. 260-543.00p.

Richardsen, Richard Flohrs: *See—*
Bielfeldt, Friedrich Bernd; and Richardsen, Richard Flohrs, 3,847,525.

Richardson, Edwin A.: *See—*
Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., 3,847,638.

Richardson-Merrell Inc.: *See—*
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Richardson-Merrell S.p.A.: *See—*
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Ricoh Co., Ltd.: *See—*
Matsuhisa, Koh, 3,847,261.
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Riddel, John W., to General Motors Corporation. Air-fuel ratio sensor. 3,847,778, Cl. 204-195.00s.

Ridgway, John A., Jr.; Lappin, Terry A.; Benjamin, Benny Moses; Corns, Joseph B.; and Akin, Cavit, to Standard Oil Company. Aerobic fermentation apparatus. 3,847,750, Cl. 195-142.000.

Ridyard, Denis Robert Annesley, to Imperial Chemical Industries Limited. Aryl-azo-pyridone compounds containing a substituted pyrimidine or triazine group. 3,847,894, Cl. 260-153.000.

Rieber, Martin; and Loffler, Wilhelm, to Farbwerke Hoechst Aktiengesellschaft vormals Meister Lucius & Bruning. Hydrophobic and oleophobic finish. 3,847,657, Cl. 117-135.500.

Rieger, Klaus K.: *See*—
Withers, James G., Jr.; and Rieger, Klaus K., 3,847,212.

Rieve, Robert W.; and Shalit, Harold, to Atlantic Richfield Company. Hydrocracking high molecular weight hydrocarbons containing sulfur and nitrogen compounds. 3,847,795, Cl. 208-108.000.

Riggio, Antonino. Pneumatic vise with high clamping force. 3,847,381, Cl. 269-32.000.

Rimlinger, Donald C.: *See*—
Squires, Howard J.; and Rimlinger, Donald C., 3,847,283.

Riordan, William J., to Kidde, Walter, & Company Inc. Flame ignition and supervision system. 3,847,533, Cl. 431-78.000.

Risk, Norman E.: *See*—
Freedy, Allan L.; and Risk, Norman E., 3,846,983.

Ritchie, William Barney, Jr.: *See*—
Bowley, Wallace William, 3,846,990.

Rittberg, Eilt-Heyo, to Olympia Werke AG. Jet printer, particularly for an ink ejection printing mechanism. 3,848,118, Cl. 239-101.000.

Rizzi, Joseph D.; and Fagan, Lloyd D., to Intersil Incorporated. Double junction read only memory. 3,848,238, Cl. 340-173.0sp.

Robbins & Myers, Inc.: *See*—
Goebel, Robert W.; and Marous, George R., 3,848,145.

Robertshaw Controls Company: *See*—
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Robertson Paper Box Co., Inc.: *See*—
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Robinson, Edward L.: *See*—
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Robinson, Jacques D.: *See*—
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Robra, Helmut: *See*—
Schmoll, Heinz; and Robra, Helmut, 3,847,008.

Robson, Harry E., to Esso Research and Engineering Company. Hydroisomerization of normal paraffinic hydrocarbons with a catalyst composite of chrysotile and hydrogenation metal. 3,848,018, Cl. 260-683.650.

Roby, Michael A., to Rubbermaid Commercial Products Inc. Duckboard fatigue relief mat. 3,846,945, Cl. 52-177.000.

Rockwell International Corporation: *See*—
Beever, Elmer R.; Shima, Rindge; and Zebus, Paul P., 3,847,024.
Boltinghouse, Joseph C.; Pelteson, Frank M.; and Pinson, John C., 3,847,026.
Troutman, Bruce L., 3,848,236.

Rodda, William E.; and Dorsey, Denis Peter, to RCA Corporation. Storage tube control apparatus for a telephone image transmission system. 3,848,084, Cl. 178-6.800.

Rodewald, Bernhard: *See*—
Mueller, Wolfgang; Rodewald, Bernhard; and Witzke, Lothar, 3,847,597.

Rodi & Wienenberger Aktiengesellschaft: *See*—
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Rodkey, Robert W.: *See*—
Wojtowicz, Edward A.; Lazzarotti, James; Hunter, James R.; and Rodkey, Robert W., 3,847,383.

Roemer, Leonhard J., Jr. Power capstan for anchor rope and the like. 3,847,378, Cl. 254-175.700.

Roesler, Frank Cornelius: *See*—
Gibson, Malcolm Ritchie; Roesler, Frank Cornelius; Smith, Stuart Raymond Leslie; and Maslen, Frank Peter, 3,847,748.

Roger, Yves, to Regie Nationale des Usines Renault and Automobiles Peugeot. Apparatus for manufacturing internal gears. 3,847,056, Cl. 90-73.000.

Rogers, William A., to Tanner Engineering Co. Low-friction seal. 3,847,389, Cl. 277-153.000.

Rogner, Gerd, to Singer Company, The. Needle thread wiper and pull-back mechanism for sewing machines. 3,847,102, Cl. 112-252.000.

Rohm & Haas Company: *See*—
Haag, Thomas H.; and Kine, Benjamin B., 3,847,857.
Walker, Robert Winn, 3,847,995.

Rohner, Joachim; Maassen, Wilhelm; and Haberkorn, Egon, to Schlafhorst, W., & Co. Pattern disruption device for crosswinding machines. 3,847,364, Cl. 242-18.100.

Rohr, Otto: *See*—
Janiak, Stefan; and Rohr, Otto, 3,847,932.

Rohr, Wolfgang: *See*—
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Rohrback, Gilson H.; and Homes, Elmond A., to Magna Corporation. Method of detecting the onset of formation of adherent precipitates on surfaces immersed in liquids, and of controlling the formation of such precipitates. 3,848,187, Cl. 324-65.0cr.

Roldan Martinez, Christobal: *See*—
Brana Fernandez, Miguel; and Roldan Martinez, Christobal, 3,847,941.

Roll-O-Sheets, Incorporated: *See*—
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Sobotta, Reinhard, 3,847,473.

Romano, Ugo: *See*—
Moggi, Pietro; and Romano, Ugo, 3,847,937.

Romeo, Donald E.; and Burcham, Neil P., to TRW Inc. MOS integrated circuit structure. 3,848,261, Cl. 357-71.000.

Rometsch, Werner; and Veil, Karl, to Bosch, Robert, G.m.b.H. Hydrostatic drive for automotive vehicles or the like. 3,846,982, Cl. 60-445.000.

Ronzio, Richard A.; Kay, Herbert; and Vincent, John D., to American Metal Climax, Inc. Process for producing high purity molybdenum oxide and ammonium molybdate. 3,848,049, Cl. 423-54.000.

Rose, Herbert E. Method and apparatus for bending arches for doorways and the like. 3,847,006, Cl. 72-375.000.

Ross, H. Cameron. Foldable portable sign standard. 3,847,335, Cl. 248-166.000.

Rossi, Anthony T. Flap closing mechanism for high speed automatic casing machine. 3,846,962, Cl. 53-374.000.

Rossi, Eugene F., to Allis-Chalmers Corporation. Reduction kiln having distribution system. 3,847,538, Cl. 432-113.000.

Roto Diesel: *See*—
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Rough, Robert R.: *See*—
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Roy, Prodyot; Simpson, James L.; and Aitken, Edward A., to United States of America, Atomic Energy Commission. Method and apparatus for fabricating composite ceramic members. 3,847,653, Cl. 117-93.000.

Royal Appliance Mfg. Co.: *See*—
Holman, William G., 3,846,865.

Royal Seating Corporation: *See*—
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Rubbermaid Commercial Products Inc.: *See*—
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Rubio, Alfred M.: *See*—
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Weber, Charles W.; Rucker, C. Olen; Peavy, Patrick L.; Woo, Pak-Fat (William); and Bear, James E., 3,847,207.

Rudolph, Hans: *See*—
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Rudolphy, Albert, to Hoechst Aktiengesellschaft. Ink binder. 3,847,850, Cl. 260-20.000.

Rudszinat, Willy, to Hauni-Werke Korber & Co. K.G. Method and apparatus for testing wrappers of cigarettes or the like. 3,847,044, Cl. 83-2.000.

Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Bolt latch for auto loading firearm. 3,846,928, Cl. 42-16.000.

Ruger, William B.; and Sefried, Harry H., II, to Sturm, Ruger & Co., Inc. Burst fire mechanism for auto-loading firearm. 3,847,054, Cl. 89-129.00b.

Rupert, Edward J.; Meyer, Monroe W.; and Uhland, Gerald E., to United States of America, Air Force. Vacuum brazing tantalum alloys. 3,846,903, Cl. 29-487.000.

Russ, Joseph E., to United States of America, Navy. Roll computer. 3,847,348, Cl. 235-151.300.

Russell, Stanley L., to Stromberg-Carlson Corporation. Telephone battery feed circuit. 3,848,094, Cl. 179-18.0fa.

Russell, William J., to Robertshaw Controls Company. Electrical switch construction and an electrical control system utilizing the same or the like. 3,848,211, Cl. 337-64.000.

Ruth, Arthur P. Animal feeder. 3,847,121, Cl. 119-51.130.

Ryan, Paul T., to General Electric Company. Control apparatus for automatic air brake systems. 3,847,450, Cl. 303-81.000.

Ryan, William H.: *See*—
Peters, Homer D. F.; Rough, Robert R.; and Ryan, William H., 3,847,581.

Rypinski, Albert B., to Duo-Mode Electric Transport System, Inc. Dual-mode transportation system. 3,847,085, Cl. 104-122.000.

Saeki, Keiso: *See*—
Matsukawa, Hiroharu; and Saeki, Keiso, 3,847,832.

Safety Devices Incorporated: *See*—
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Saito, Tadayoshi; Miura, Kiyoshi; and Nakano, Yoshiyuki, to Hitachi, Ltd. Electronic analog operational circuit. 3,848,117, Cl. 235-193.000.

Sakaguchi, Shinji: *See*—
Yoshida, Takashi; Sakaguchi, Shinji; and Miyazako, Takushi, 3,847,615.

Sakai, Joseph A., Jr. Lift cell. 3,847,368, Cl. 244-13.000.

Sakai, Masatada: *See*—
Nomaguchi, Tamotsu; Sakai, Masatada, and Ito, Toshio, 3,847,534.

Sakai, Tetsuo: *See*—
Ikeda, Hiroaki; Hirashima, Teruo; Sakai, Tetsuo; Iwamura, Soichi; Ohishi, Iwao; Fujio, Takashi; and Kamegaya, Takeo, 3,848,086.

Sakamoto, Eiichi: *See*—
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Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, 3,847,613.

Sakazume, Kaiichiro; Sakamoto, Eiichi; Mine, Kiyomitsu; Fujimori, Noboru; and Ito, Shigemasa, to Konishiroku Photo Industry Co. Ltd. Silver halide photosensitive materials for color photography. 3,847,613, Cl. 96-74.000.

Sakiyama, Kazutaka; and Hashimoto, Tsutomu, to Toyo Soda Manufacturing Co., Ltd. Liquid supply system by pump. 3,847,507, Cl. 417-22.000.

Saleck, Wilhelm: *See—*
Philippaerts, Herman A.; Pollet, Robert Joseph; Muller-Bardorff, Wolfgang; Saleck, Wilhelm; Moll, Franz; and Ghys, Theofiel Hubert, 3,847,617.

Sally, Theodore J.: *See—*
Morris, Earl L.; and Sally, Theodore J., 3,847,336.

Salvail, Napoleon Paul. Solar water-heating systems. 3,847,136, Cl. 126-271.000.

Salzer, Erwin: *See—*
Kozacka, Frederick J.; and Salzer, Erwin, 3,848,215.

Salzer, Erwin, to Chase-Shawmut Company, The. Method of assembling electric high-voltage fuses and subassembly therefor. 3,848,214, Cl. 337-158.000.

Sanders Associates, Inc.: *See—*
Figler, Burton D.; and Nussdorfer, Theodore J., 3,848,129.
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Sandhack, Lothar: *See—*
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Sandoz Ltd.; a/k/a Sandoz AG: *See—*
Avar, Lajos; Hofer, Kurt; and Preiswerk, Martin, 3,847,960.

Sandoz-Wander, Inc.: *See—*
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Sandstrom, Wayne R.; and Keturi, Raymond C. Precast concrete building construction. 3,846,946, Cl. 52-221.000.

Sandvik Aktiebolag: *See—*
Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, 3,847,763.

Santambrogio, Alberto; and Perrotti, Emilio, to Snam Progetti S.p.A. Preparation of caprolactam and dicyclohexyl ketone. 3,847,902, Cl. 260-239.30a.

Santilli, Ruggero. Intermeshing paddles. 3,847,395, Cl. 273-96.00r.

Santilli, Ruggero. Intermeshing paddles. 3,847,398, Cl. 273-96.00r.

Sarco Canada Limited: *See—*
Adachi, Rai Reiji, 3,847,814.

Sastri, Aiyaswami Suryanarayan, to Gillette Company, The. Processes for producing novel steels. 3,847,683, Cl. 148-12.300.

Sata, Toshikatsu; Nishimura, Masakatsu; and Izuo, Ryuji, to Tokuyama Soda Kabushiki Kaisha. Selective electrodialysis of cations. 3,847,772, Cl. 204-180.00p.

Sato, Katunobu: *See—*
Hagiwara, Yoshichi; Sato, Katunobu; Komatsu, Hideo; Yuguchi, Sadao; Yoshizumi, Nobuo; Nagai, Kenya; Takeda, Hiromu; and Ohnishi, Sei-Ichiro, 3,848,044.

Sato, Kenji: *See—*
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Sato, Shigeru: *See—*
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Saturn Machine & Welding Co., Inc.: *See—*
Baird, William R.; and Sutton, Kenneth O., 3,847,753.

Saunders Archery Co.: *See—*
Saunders, Charles A., 3,846,873.

Saunders, Charles A., to Saunders Archery Co. Face pin for archery targets. 3,846,873, Cl. 24-153.00r.

Savage, David W.: *See—*
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Sawada, Morihiko: *See—*
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Sayler, Ralph A.: *See—*
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Pozdnikov, Vladimir Nikolaevich; Sazonov, Oleg Leonidovich; Taxar, Iegoshua Mikhailovich; Tesnavs, Edgar Rikhardovich; Yanushkovsky, Vladimir Alexandrovich; Gavrilov, Alexandr Pavlovich; Korkonosov, Valentin Petrovich; Peresypkin, Alexei Vasilievich; and Sapovalov, Eduard Parfentievich, 3,848,131.

Scanner, Inc.: *See—*
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Schachet, Eli, to Sherwood Medical Industries, Inc. Modular thoracic drainage device. 3,847,152, Cl. 128-276.000.

Schaefer, Frank W. Method of applying refractory covering to skid rail. 3,848,034, Cl. 264-30.000.

Schaefer, Otto W. Apparatus for producing pigtails on hanger wires. 3,847,003, Cl. 72-134.000.

Schaffer, Fritz, G.m.b.H.: *See—*
Weidt, Karl-Adolf, 3,847,460.

Schantz, Spencer C.: *See—*
Schantz, Spencer C.; and Berry, William R. (said Berry assor to said), 3,848,205.

Schantz, Spencer C.; and Berry, William R., said Berry assor to said Schantz, Spencer C. Kick-out switch and buzzer. 3,848,205, Cl. 335-128.000.

Scharlack, Ronald S., to Kelsey-Hayes Company. Skid control system for tandem axled vehicles. 3,847,446, Cl. 303-21.0eb.

Scharm, Klaus: *See—*
Zerle, Ludiw; and Scharm, Klaus, 3,848,184.

Schatz, Milton C. Table-tennis ball throwing machine using air propulsion. 3,847,132, Cl. 124-11.00r.

Schaudel, Rolf, to Rodi & Wienenberger Aktiengesellschaft. Expansion bracelet. 3,846,976, Cl. 59-79.00r.

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Schissler, Lloyd R., to Sperry Rand Corporation. Acoustic delay surface wave motion transducer systems. 3,848,144, Cl. 310-8.100.

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Schokkenbroek, Jan, to Koninklijke Nederlandsche Hoogovens en Staalfabrieken N.V. Method for adding a granular or powdered reaction component to a molten metal, as well as an improved granular or powdered reaction component for carrying out a corrective rection on a molten metal. 3,847,592, Cl. 75-53.000.

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Smithe, F. L., Machine Company, Inc.: *See—*
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Snam Progetti S.p.A.: *See—*
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Santambrogio, Alberto; and Perrotti, Emilio, 3,847,902.

Snap-on Tools Corporation: *See—*
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Snooks, Rupert J., Jr.: *See—*
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Snow, Helen E.: *See—*
Snow, Henry A., 3,847,569.

Snow, Henry A., to Snow, Helen E. Method of making a cable type saw. 3,847,569, Cl. 51-309.000.

Snyder, Lloyd R., to Technicon Instruments Corporation. Method and apparatus for curtain electrophoresis. 3,847,773, Cl. 204-180.00r.

Sobajima, Shigenobu; Takagi, Norio; and Chiba, Kiyoshi, to Teijin Limited. Process for producing plastic articles having transparent electroconductive coatings. 3,847,659, Cl. 117-211.000.

Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Dual photographic slide projector. 3,847,472, Cl. 353-94.000.

Sobotta, Reinhard, to Rollei-Werke Franke & Heidecke. Slide projector with variable timing means for slide change. 3,847,473, Cl. 353-114.000.

Social Dynamics Inc.: *See—*
Ford, Sanders, Jr., 3,847,565.

Societe Anonyme Francaise du Ferodo: *See—*
Fieni, Walter, 3,847,367.

Societe Anonyme: Glaenzer Spicer: *See—*
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Societe d'Assistance Technique Pour Products Nestle S.A.: *See—*
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Societe en nom collectif "Science et Cie," Societe Francaise de Recherche Medicale: *See—*
Beregi, Laszlo; Hugon, Pierre; Desnoyers, Pierre; and Duhault, Jacques, 3,847,925.

Societe Generale de Constructions Electriques et Mecaniques (Alsthom): *See—*
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Societe Industrielle Honeywell Bull (Societe Anonyme): *See—*
Guermeur, Georges Roger; and Seigneur, Daniel, 3,848,140.

Soga, Takaaki: *See—*
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Sokol, Michael; and Kent, Frederick M., to Bio/Data Corporation. Apparatus for detecting a change in turbidity of a solution. 3,847,482, Cl. 356-40.000.

Solartron Electronic Group Limited, The: *See—*
Ashford, David William, 3,847,396.

Soliman, Mustafa: *See—*
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Soltovets, Galina Nikolaevna: *See—*
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Somann, Gert: *See—*
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Somasekhara, Shankar; and Desai, Dinesh Maganlal, to Karamchand Premchand Private Limited. Novel-5-nitro furfuraldehyde derivatives and process for their preparation and pharmaceutical compositions containing same. 3,847,912, Cl. 260-240.00a.

Sony Corporation: *See—*
Kayama, Takashi, 3,848,179.

Sorm, Frantisek: *See—*
Dolejs, Ladislav; Machkova, Zuzana; Beran, Pavel; Kahovcova, Jitka; Slama, Karel; and Sorm, Frantisek, 3,847,907.

Sova, Vladimir, to Brown, Boveri & Company. Process for depositing a metal layer upon a plastic. 3,847,649, Cl. 117-47.00a.

Soykan, Ferhun H.; Huntington, John S.; and Darmara, Falih N., to Special Metals Corporation. Control apparatus for continuously casting liquid metal produced from consumable electrodes. 3,847,205, Cl. 164-155.000.

Sparks, Allen K., to Universal Oil Products Company. Paraffin halogenation process. 3,848,006, Cl. 260-660.000.

Sparr, Erik Einar: *See—*
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Special Metals Corporation: *See—*
Soykan, Ferhun H.; Huntington, John S.; and Darmara, Falih N., 3,847,205.

Speedco, Inc.: *See—*
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Sperberg, Lawrence R. Method of controlling and measuring tire forces. 3,847,012, Cl. 73-8.000.

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Campbell, Curtis M.; and Miller, Ronald J., 3,848,114.
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Schissler, Lloyd R., 3,848,144.
Thomas, Ronald E., 3,848,172.

Speth, Winfried; and Loffelmann, Fritz, to Siemens Aktiengesellschaft. Arrangement for the optimum setting of the rotor blades of water turbines. 3,848,171, Cl. 318-561.000.

Spiegel, Gerald M., Jr.: *See—*
Schwartz, Leon J.; Spiegel, Gerald M., Jr.; and Hecht, Leon N., Jr., 3,847,606.

Spiri, Willy H., to Cavins Co., The. Well slip assembly. 3,846,877, Cl. 24-263.0ca.

Spohr, Guenter. Method and apparatus for treating sludge. 3,847,808, Cl. 210-66.000.

Sprout, Waldron & Company, Inc.: *See—*
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Squibb, E. R., & Sons, Inc.: *See—*
Breuer, Hermann; and Treuner, Uwe D., 3,847,908.
Denzel, Theodor; and Hoehn, Hans, 3,847,929.

Squires, Howard J.; and Rimlinger, Donald C. Reed switch analyzer. 3,847,283, Cl. 209-74.00m.

St. Cyr, Lewis A.: *See—*
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Staba, E. John; and Shafiee, Ali, to University of Minnesota, The Regents of the. Production of allergens by plant tissue culture technique. 3,846,937, Cl. 47-58.000.

Stabilator Aktiebolag: *See—*
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Stach, Kurt: *See—*
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Standard Oil Company: *See—*
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Hanson, Robert B.; and Stephens, James R., 3,847,878.
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Standard Products Company, The: *See—*
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Standard Register Company, The: *See—*
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Standard Steel Products Corporation: *See—*
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Staneck, Robert W.: *See—*
Parenti, Frank V.; and Staneck, Robert W., 3,847,318.

Stankiewicz, Jerzy G. Traffic network for urban settlement. 3,847,496, Cl. 404-1.000.

Stanley Aviation Corporation: *See—*
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Stanley, Robert M., to Stanley Aviation Corporation. Rocket escape apparatus. 3,847,329, Cl. 244-122.0ad.

Stark, Reinhard: *See—*
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Stasiuk, Michael, to Versatile Manufacturing Ltd. Power transmission device. 3,847,035, Cl. 74-687.000.

Statman, Max; and Page, Ralph E., Jr., to Eastman Kodak Company. Recovery of diethyl ether from an olefin hydration product stream by extractive distillation with water. 3,847,756, Cl. 203-92.000.

Statni Vyzkumny Ustav Kozedelny: *See—*
Muck, Eduard; Strachota, Jaroslav; and Horak, Josef, 3,848,024.

Staudt, Heinrich, to Bosch, Robert, G.m.b.H. Centrifugal RPM governor for fuel injected internal combustion engines. 3,847,127, Cl. 123-140.00r.

Stauffer Chemical Company: *See—*
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Mihailovski, Alexander; and Baker, Don R., 3,847,980.
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Stearns, William P.; and Elpern, Barry S., to Holmes, John L., mesne. Method of fitting a prosthetic device for providing corrections of auditory deficiencies in aurally handicapped persons. 3,848,091, Cl. 179-1.00n.

Steckelberg, Willi: *See—*
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Steenbeck, Ulf, to Messerschmitt-Bolkow-Blohm GmbH. Suspended railway having a magnetic suspended guide of its vehicles. 3,847,086, Cl. 104-130.000.

Steiger, Roger A.; and Wilson, William L., to PPG Industries, Inc. Preparation of monotungsten carbide. 3,848,062, Cl. 423-440.000.

Stein, Leonard, to General Electric Company. Method of forming silicon epitaxial layers. 3,847,686, Cl. 148-175.000.

Stein, William B., to Warner & Swasey Company, The. Cutoff insert apparatus. 3,846,882, Cl. 29-96.000.

Steinwart, Johannes; and Feierabend, Karl. Ignition system for rotary piston combustion engines of trochoid type. 3,847,257, Cl. 192-.062.

Stelzer, Roland B.: *See*—
Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,220.
Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,221.

Stengelin, Adolf Friedrich Johann Conrad; deceased (by Stengelin, Volker; and Stengelin, Jorg; heirs). Apparatus for biologically purifying effluent. 3,847,811, Cl. 210-150.000.

Stengelin, Jorg: *See*—
Stengelin, Adolf Friedrich Johann Conrad, 3,847,811.

Stengelin, Volker: *See*—
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Stenseng, Mogens Martin: *See*—
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Stepanova, Valentina Gavrilovna: *See*—
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Stephens, William D.; Willis, T. Chade; and Combs, Charles S. Polymers and copolymers of 1-ferrocenyl-1,3-butadiene. 3,847,871, Cl. 260-63.0bb.

Sterzer, Fred, to RCA Corporation. Semiconductor delay lines using three terminal transferred electron devices. 3,848,141, Cl. 307-293.000.

Stevens, Travis E.; and Reed, Samuel F., Jr., to United States of America, Army, mesne. Ferrocene-containing monomers. 3,847,958, Cl. 260-439.0cy.

Stewart, Richard F. Apparatus and method for automatically digitizing line patterns. 3,848,089, Cl. 178-18.000.

Stewing, Albert. Method of joining synthetic-resin tubes. 3,847,694, Cl. 156-86.000.

Stich, Ernest, 50% interest to Dreier-Saner, Urs. Finned-tube heat exchanger. 3,847,213, Cl. 165-181.000.

Stickler, Charles W., Jr., to Gray Tech Industries, Inc. Collapsible interior form for a monolithic structure. 3,847,341, Cl. 249-27.000.

Stickler, Charles W., Jr., to Grey Tech Industries, Inc. Hinged roof and sidewall forms for a monolithic structure. 3,847,521, Cl. 425-62.000.

Stieglitz, Henry Gilbert: *See*—
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Stigberg, Jon D.: *See*—
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Stirnemann, Max Lehner. Apparatus for fabricating price shields or the like consisting of a price tag or label printed by a balance and a label support. 3,847,704, Cl. 156-364.000.

Stockman, Richard F., to Air Preheater Company, Inc. The. Ash removal system. 3,847,296, Cl. 110-165.00r.

Stolzer, Paul, to Keuro Maschinenbau Gesellschaft mit beschrankter Haftung & Co. Power frame saw. 3,847,048, Cl. 83-452.000.

Stone, Herman: *See*—
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Strachota, Jaroslav: *See*—
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Strain, Franklin, to PPG Industries, Inc. Process using silicate treated asbestos diaphragms for electrolytic cells. 3,847,762, Cl. 204-98.000.

Strand, Richard J.: *See*—
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Straniti, Salvatore, to Avco Corporation. Turbomachine rotor. 3,847,506, Cl. 416-244.000.

Stromberg-Carlson Corporation: *See*—
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Strube, Herbert Eugene: *See*—
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Stumpf, Walter, to Simmons Company. Upholstery spring coil. 3,847,379, Cl. 267-91.000.

Sturm, Hans-Juergen; Kempter, Fritz Erdmann; and Armbrust, Herbert, to Badische Anilin- & Soda-Fabrik Aktiengesellschaft. Continuous production of anthranilic acid. 3,847,974, Cl. 260-518.00r.

Sturm, Ruger & Co., Inc.: *See*—
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Ruger, William B.; and Sefried, Harry H., II, 3,847,054.

Su, Tsung-Yuan, to Phillips Fibers Corporation. Analysis of materials to measure vaporizable components. 3,847,554, Cl. 23-253.0pc.

Sub-Marine Systems Incorporated: *See*—
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Subsea Equipment Associates Limited: *See*—
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Suh, John T.; and Bare, Thomas M., to Colgate-Palmolive Company. α,α-Dialkylphenethylamine derivatives. 3,847,950, Cl. 260-340.500.

Suhr, Peter J.: *See*—
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Suman, George O., Jr.; Richardson, Edwin A.; and Scheuerman, Ronald F., to Shell Oil Company. Hydrated metal oxide deposition. 3,847,638, Cl. 106-287.00s.

Sumitomo Chemical Company, Limited: *See*—
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Sun Chemical Corporation: *See*—
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Sun Oil Company of Pennsylvania: *See*—
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Sun Research and Development Co.: *See*—
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Sutyak, John J., to Mesta Machine Company. Plunger and cylinder arrangement. 3,847,062, Cl. 92-86.500.

Suykens, Matthieu, to Borg-Warner (Canada) Ltd. Bulk ship unloader. 3,847,290, Cl. 214-15.00e.

Suzuki, Akira; Hagiwara, Masaki; and Teraoka, Nobuhiro, to Suzuki Metal Industry Co., Ltd. Method of producing steel wire and strand for pre-stressed concrete construction. 3,847,002, Cl. 72-128.000.

Suzuki, Hideaki; Togawa, Haruo; Omori, Akira; and Yamamoto, Naoki, to Teijin Limited. Metal-chelating and solvent-resistant filamentary structure and process for its production. 3,847,842, Cl. 260-2.20r.

Suzuki, Isao: *See*—
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Suzuki Metal Industry Co., Ltd.: *See*—
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Suzuki, Takeo; Tomita, Fusao; Nakano, Hirofumi; and Honda, Haruo, to Kyowa Hakko Kogyo Co., Ltd. Process for producing chloramphenicol analogs. 3,847,747, Cl. 195-96.000.

Suzuki, Tsunao; Senuma, Mitsushi; Takakura, Ichiro; and Masuda, Toshio, to Nippon Zeon Company, Ltd. Process for the preparation of vinyl chloride resins having good thermal stability. 3,847,853, Cl. 260-23.0xa.

Svensson, Tore Rolf; Fundell, Kjell Erik; Ekemar, Karl Sven Gustave; Lind, Bengt Anders; and Fischer, Udo, to Sandvik Aktiebolag. Method of reducing wear of a cemented carbide roll. 3,847,763, Cl. 204-148.000.

Swierkot, Helmut Johann. Buckle assembly. 3,846,874, Cl. 24-188.000.

Swindells, Norman; and Bevis, Michael, to National Research Development Corporation. Recording of Kossel lines. 3,848,126, Cl. 250-272.000.

Swiss Aluminium Ltd., mesne: *See*—
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Syfritt, Harold A. Assembly for use in recreational activities. 3,846,858, Cl. 9-2.00s.

Syncro Corporation: *See*—
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Szarvasi, Etienne; and Fontaine, Louis, to Lipha, Lyonnaise Industrielle Pharmaceutique. Novel substituted (nitrofurylacrylidene) hydrazines with antibacterial properties. 3,847,911, Cl. 260-240.00a.

Szendroi, Imre; and Ehret, Jenson E., to Bethlehem Steel Corporation. Paddle switch for automatic gate closure on hoppers. 3,847,303, Cl. 222-66.000.

Tabler, Donald C.: *See—*
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Tachibana, Shinro, to Eisai Co., Ltd. Separation of secretin and cholecystokininpancreozymin from mixture thereof. 3,847,891, Cl. 260-112.500.

Tada, Rentaro; Sato, Kenji; and Nishioka, Kinichi, to Kuraray Co., Ltd. Separation and purification of the saponified ethylene-vinyl acetate interpolymers. 3,847,845, Cl. 260-2.50m.

Taeymans, Alois; Dumont, Georges; and Balleux, Willem, to Belgonucleaire. Treatment of combustible residue. 3,847,094, Cl. 110-8.00r.

Takagi, Kachio: *See—*
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Takahashi, Shizuo; Kobayashi, Yoshio; and Hosogai, Toshio, to Tokyo Automatic Machinery Works, Ltd. Apparatus for making bags from soft tapes of synthetic resins. 3,847,708, Cl. 156-510.000.

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Takarada, Eiichi, to Amsted Industries Incorporated. Servo feed control for electrical discharge machining. 3,848,108, Cl. 219-69.00g.

Takeda, Hiromu: *See—*
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Takeda, Tadashi; Nakazawa, Yukiyoshi; and Ikeda, Hiroshi, to Hitachi, Ltd. Method of manufacturing semiconductor devices. 3,847,677, Cl. 148-1.500.

Takekoshi, Tohru, to General Electric Company. Method for making polyetherimides. 3,847,870, Cl. 260-47.0cp.

Takeuchi, Richard T. Split hull design for boats. 3,847,103, Cl. 114-66.50r.

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Tambor, Ronald, to Thiokol Chemical Corporation, mesne. Rolling diaphragm with lateral support. 3,847,308, Cl. 222-386.500.

Tamura, Nobuhiro: *See—*
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Tamura, Zensuki: *See—*
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Tanaka, Satoru; and Hashimoto, Kazunori, to Eisai Co., Ltd. Certain scopolammonium compounds. 3,847,924, Cl. 260-292.000.

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Tashbar, Philip W., to Unites States of America, National Aeronautics and Space Administration. System for depositing thin films. 3,847,115, Cl. 118-49.100.

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Allen, Joseph C.; Tate, Jack F.; and Stelzer, Roland B., 3,847,221.
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Taxil, Andre Marc Victorin; and Boucher, Raymond Claude Emile, to ITT Industries, Inc. Discharge lamp with baffle plates. 3,848,150, Cl. 313-204.000.

Taylor, Walter S. Vessel and sealing member structures for sparkling wines. 3,847,295, Cl. 215-1.00r.

Te Velde, Ties Siebolt, to U.S. Philips Corporation. Method of manufacturing an electrode system. 3,847,758, Cl. 204-15.000.

Teach, Eugene G.; and Arneklev, Duane R., to Stauffer Chemical Company. Meta-thiocarbamyl phenylene amides and ureas as herbicides. 3,847,587, Cl. 71-88.000.

Teague, Gilbert B. Ball sprue swage method and means. 3,847,000, Cl. 72-89.000.

Team Industries: *See—*
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Technicon Instruments Corporation: *See—*
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Thayer, Inc.: *See—*
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Theodore, Ares N.: *See—*
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Thompson, Chester C.; Olsen, Severt E.; and Loby, Raymond J., to Radiation Dynamics, Inc. High voltage solid-state rectifier system. 3,848,174, Cl. 321-11.000.

Thompson, George Scott. Vehicle heating unit. 3,847,350, Cl. 237-8.00a.

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Timberjack Machines Limited: *See—*
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Time/Data Corporation: *See—*
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Tittelbach, Herbert. Disassemblable valve. 3,847,374, Cl. 251-367.000.

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Toledo, Emil, to Raytheon Company. Method of making a magnetic memory device. 3,847,759, Cl. 204-28.000.

Tolle, Gunter. Sewing machine having thread severing device. 3,847,101, Cl. 112-252.000.

Tolstov, Jury Georgievich; Skorovarov, Vladimir Efremovich; Grinshtein, Boris Ilich; Stepanova, Valentina Gavrilovna; Bashkatov, Ivan Pavlovich; Vinitsky, Jury Danilovich; Balyasinsky, Valery Ottovich; and Shmusrov, Valery Pavlovich. Surge arrestor for hig voltage electric power applications. 3,848,156, Cl. 315-36.000.

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Toth, Ivan, to Csepeli Szerszamgepgyar. Method and construction for increasing the service life of rolling screw mechanism with double-nut prestress. 3,847,033, Cl. 74-459.000.

Tourtellot, John Allen; and Stave, Frederick Roland, to RCA Corporation. AC motor. 3,848,146, Cl. 310-163.000.

Townsend, Stephen E., to Xerox Corporation. Staggered scan facsimile. 3,848,083, Cl. 178-6.000.

Toyo Seiken Kaisha Limited: *See—*
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Toyo Soda Manufacturing Co., Ltd.: *See—*
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Toyo Tire Cord Company Limited: *See—*
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Trabocco, Ronald E.; and De Luccia, John J., to United States of America, Navy. Titanium-beryllium reinforced matrices. 3,847,558, Cl. 29-191.400.

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Treese, David W. Flow through impellers and fluid machines employing same. 3,847,505, Cl. 415-213.000.

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Trivette, Chester D., Jr.; and Vander Kooi, John P., to Monsanto Company. Method for vulcanizing rubber with bis-sulfenamide accelerators. 3,847,880, Cl. 260-79.50b.

Trocciola, John C.; and Walsh, Myles A., III, to United Aircraft Corporation. Fuel cell with gas separator. 3,847,672, Cl. 136-86.00c.

Troutman, Bruce L., to Rockwell International Corporation. Threshold circuit. 3,848,236, Cl. 340-173.00r.

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Tsunemitsu, Hideo; and Shiba, Hiroshi, to Nippon Electric Company, Limited. Electrode structure for a semiconductor device having a shallow junction and method for fabricating same. 3,848,260, Cl. 357-71.000.

Tu, Hsiu-Ying. Soft mat. 3,846,856, Cl. 5-344.000.

Tucker, Council A., to American Telecommunications Corporation. Telephone wall mount. 3,848,097, Cl. 179-146.00r.

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Tugukuni, Hideyoshi; and Matsuda, Mitsuhiro, to Dai Nippon Toryo Co., Ltd. Thermosetting synthetic polymer dispersions and process for production thereof. 3,847,851, Cl. 260-22.0cb.

Tulumello, Angelo C. Apparatus for separating oil from water and measuring the amount of oil so separated. 3,847,810, Cl. 210-96.000.

Turk, Charles D., to Texas Instruments, Incorporated. Corrosion resistant metallic multilayer structure. 3,847,560, Cl. 29-196.300.

Turner, Richard E. Foot support. 3,847,147, Cl. 128-83.500.

Turolla, Carlo; Bonfanti, Giovanni; and Pasqualucci, Carmine, to ARCHIFAR Industrie Chimiche del Trentino S.p.A. Method for extracting and isolating rifamycin O from fermentation broths of rifamycins. 3,847,903, Cl. 260-239.30p.

Tyler, William E., III, to Esso Research and Engineering Company. Acid catalyzed alkylation of hydantoin. 3,847,933, Cl. 260-309.500.

Tyrseck, Walter J., to Robertson Paper Box Co., Inc. Check wallet and blank for forming same. 3,847,195, Cl. 150-39.000.

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Ubelacker, Erich, to Rheinstahl Aktiengesellschaft. Armored vehicle. 3,847,053, Cl. 89-36.00k.

Uchanski, Joseph; and Uchanski, Olga. Nontipping, disposable dishware. 3,847,324, Cl. 229-1.50h.

Uchanski, Olga: *See—*
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Uchiyama, Masao; and Mori, Shoichiro, to Mitsubishi Petrochemical Company Limited. Catalytic steam dealkylation. 3,848,014, Cl. 260-672.00r.
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National Aeronautics and Space Administration; Administrator; with respect to an invention of:
Heinemann, Klaus. Method of forming aperture plate for electron microscope. 3,847,689, Cl. 156-7.000.
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Van Atta, Peter W., to United States of America, Army. Low light level television camera. 3,848,085, Cl. 178-7.200.
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Van Den Berg, Johan H., to Van Eekelen, Alex H. A. and Monroe Belgium N.V. Windshield Wiper assembly. 3,846,863, Cl. 15-250.320.
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Van der Ham, Wim. Inlet grill. 3,847,066, Cl. 98-40.0vt.
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Watson, Donald W., to Xerox Corporation. Adhesive binding means for edge binding assembly pages together in book fashion. 3,847,718, Cl. 161-39.000.
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Zanoni, Carl Z., to Zygo Corporation. Optical noncontacting surface sensor for measuring distance and angle of a test surface. 3,847,485, Cl. 356-167.000.
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Zeller, Robert Dale, to Johns-Manville Corporation. Method and apparatus for centering a luminaire support. 3,847,333, Cl. 248-125.000.
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Zurek, Rudolf; and Modersohn, Dieter, to Krauss-Maffei Aktiengesellschaft. Current collecting shoe for suspension type vehicle. 3,847,256, Cl. 191-49.000.
Zvanut, Albert J., to Stoody Company. Arc welding process and electrode for stainless steel. 3,848,109, Cl. 219-146.000.
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Baermann, Max. Eddy current and/or induction brake or clutch. Re. 28,237, 11–12–74, Cl. 310—93.

Boosen, Karl-Josef, to Lonza Ltd. Method for manufacturing tetronic acid. Re. 28,242, 11–12–74, Cl. 260—343.6.

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Danforth, Richard L.: *See*—
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Dupuis, Hubert J., to Carmet Co. Indexable broach. Re. 28,239, 11–12–74. Cl. 29—95.1.

Eastman Kodak Co.: *See*—
Jenkins, Philip W. Re. 28,240.

Hendricks, Willis R., and R. L. Danforth, to Shell Oil Co. Footwear assembly. Re. 28,236, 11–12–74, Cl. 36—2.5.

Jenkins, Philip W., to Eastman Kodak Co. Photosensitive elements containing photooxidants containing heterocyclic nitrogen atoms substituted by an alkoxy or an acyloxy group. Re. 28,240, 11–12–74, Cl. 96—90.

Koster, Robert A., to The Bunker-Ramo Corp. Control/display apparatus. Re. 28,238, 11–12–74, Cl. 340—172.5.

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Rys, Tadeusz, to Square D Company. Bolted contact switch with cam means for overcoming magnetic pinch forces on contact blades. Re. 28,243, 11–12–74, Cl. 200—256.

Shell Oil Co.: *See*—
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Cohen, Maurice. End support for a garment display rack. 233,576, 11–12–74, Cl. D6—85.

Conway, Ronald I., R. V. Jones, J. J. Natoli, and J. V. Stram, to International Business Machines Corp. Numeric input/audio output multifunction console or the like. 233,608, 11–12–74, Cl. D26—5.

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33 3,847,582
3,847,583
40 3,847,584
99A 3,847,585
290 3,847,586
CLASS 66
50B 3,846,996
CLASS 71
88 3,847,587
90 3,847,588
92 3,847,589
121 3,847,590
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6 3,846,997
34 3,846,998
68 3,846,999
89 3,847,000
96 3,847,001
128 3,847,002
134 3,847,003
184 3,847,004
375 3,847,006
393 3,847,005
3,847,007
407 3,847,008
427 3,847,009
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477 3,847,011
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8 3,847,012
40.7 3,847,013
49.3 3,847,014
70 3,847,015
71.5US 3,847,016
88.5R 3,847,017
94 3,847,018
117.3 3,847,019
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423R 3,847,023
432SD 3,847,024
460 3,847,025
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242.14R 3,847,030
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459 3,847,033
491 3,847,034
687 3,847,035
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60 3,847,593
63 3,847,594
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122 3,847,599
126C 3,847,600
130.5 3,847,601
161 3,847,602
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52.4R 3,847,038
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57.18 3,847,040
57.38 3,847,041
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5 3,847,043
CLASS 83
2 3,847,044
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344 3,847,047
452 3,847,048
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36K 3,847,053
129B 3,847,054
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14 3,847,055
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CLASS 91
6.5 3,847,057
413 3,847,058
453 3,847,059
3,847,060
497 3,847,061
CLASS 92
86.5 3,847,062
100 3,847,063
CLASS 93
1C 3,847,064
CLASS 96
15D 3,847,604
1.5 3,847,605
3,847,606
1.6 3,847,607
27R 3,847,608
33 3,847,609
35.1 3,847,610
48R 3,847,611
67 3,847,612
74 3,847,613
75 3,847,614
77 3,847,615
90R Re.28,240
94R 3,847,616
3,847,617
95 3,847,618
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114 3,847,620
126 3,847,621
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40VT 3,847,066
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323.8 3,847,067
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32 3,847,071
35 3,847,072
88 3,847,073
209 3,847,074
223 3,847,075
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3R 3,847,078
24 3,847,077
122 3,847,076
426 3,847,079
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27R 3,847,080
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20 3,847,084
122 3,847,085
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148MS 3,847,087
3,847,088
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50 3,847,626
3,847,627
52 3,847,625
3,847,628
65 3,847,629
90 3,847,630
97 3,847,632
98 3,847,633
109 3,847,634
110 3,847,635
168 3,847,636
271 3,847,637
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101R 3,847,092
165R 3,847,296
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36.7 3,847,644
36.9 3,847,645
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47A 3,847,648
3,847,649
71M 3,847,650
72 3,847,651
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123D 3,847,654
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3,847,115
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51.13 3,847,121
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141 3,847,128
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21R 3,847,135
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2V 3,847,141
2.05F 3,847,142
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66 3,847,145
75 3,847,146
83.5 3,847,147
225 3,847,149

229 3,847,150
269 3,847,151
276 3,847,152
303.14 3,847,153
305 3,847,154
334R 3,847,155
335.5 3,847,156
348 3,847,157
492 3,847,158

CLASS 130

27T 3,847,160

CLASS 131

10.3 3,847,161
17 3,847,326
133 3,847,162
143 3,847,163
3,847,164

CLASS 132

7 3,847,165
9 3,847,166
92R 3,847,167
3,847,168

CLASS 134

1 3,847,662
2 3,847,663
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6 3,847,665
57D 3,847,666
183 3,847,169

CLASS 135

1R 3,847,170
5AT 3,847,171

CLASS 136

6FS 3,847,667
6G 3,847,668
30 3,847,669
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86B 3,847,673
86C 3,847,672
86R 3,847,670
100 3,847,674
133 3,847,675
148 3,847,676

CLASS 137

100 3,847,172
110 3,847,173
334 3,847,174
360 3,847,175
382 3,847,176
400 3,847,177
515.7 3,847,178
596 3,847,179
596.13 3,847,180
613 3,847,181

CLASS 138

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96R 3,847,183
120 3,847,184
122 3,847,185
173 3,847,186
178 3,847,148

CLASS 139

127P 3,847,187
384B 3,847,188

CLASS 140

106 3,847,189
149 3,847,190

CLASS 141

12 3,847,191

CLASS 144

34E 3,847,192

CLASS 145

46 3,847,193

CLASS 148

1.5 3,847,677
2 3,847,678
3,847,679
11.5A 3,847,681
11.5F 3,847,680
12.1 3,847,682
12.3 3,847,683
20.6 3,847,684
31.5 3,847,685
175 3,847,686
187 3,847,687

CLASS 150

28 3,847,194
39 3,847,195

CLASS 152

209R 3,847,698
226 3,847,196

CLASS 156

2 3,847,688
7 3,847,689
13 3,847,690
72 3,847,691
3,847,692
79 3,847,693
86 3,847,694
96 3,847,631
3,847,695
154 3,847,696
155 3,847,697
251 3,847,699
252 3,847,700
259 3,847,701
265 3,847,702
293 3,847,199
294 3,847,703
364 3,847,704
405 3,847,705
417 3,847,706
436 3,847,707
510 3,847,708
3,847,709
511 3,847,710
515 3,847,711
583 3,847,712

CLASS 157

1.17 3,847,197
1.24 3,847,198

CLASS 159

4A 3,847,713
3,847,714
16R 3,847,200

CLASS 160

105 3,847,201

CLASS 161

7 3,847,715
35 3,847,716
37 3,847,717
39 3,847,718
65 3,847,719
108 3,847,721
109 3,847,722
159 3,847,720
160 3,847,723
161 3,847,724
167 3,847,725
186 3,847,726
215 3,847,727
252 3,847,728
256 3,847,729

CLASS 162

198 3,847,730
203 3,847,731

CLASS 164

50 3,847,202
60 3,847,203
132 3,847,204
155 3,847,205
274 3,847,206

CLASS 165

1 3,847,207
3,847,208
14 3,847,209
103 3,847,210
166 3,847,211
179 3,847,212
181 3,847,213

CLASS 166

.5 3,847,214
.6 3,847,215
72 3,847,216
85 3,847,217
224A 3,847,218
263 3,847,219
273 3,847,220
274 3,847,221
3,847,224
303 3,847,222
305R 3,847,223

CLASS 171

101 3,847,225

CLASS 172

371 3,847,226
378 3,847,227
450 3,847,228

CLASS 173

48 3,847,229
127 3,847,230
134 3,847,231
168 3,847,232
170 3,847,233

CLASS 174

36 3,848,073
38 3,848,074
52S 3,848,077
3,848,078
68.5 3,848,079
94 3,848,075
141R 3,848,076
164 3,848,080
209 3,848,081

CLASS 175

228 3,847,234
372 3,847,235
383 3,847,236

CLASS 176

28 3,847,733
31 3,847,734
38 3,847,735
78 3,847,736

CLASS 177

25 3,847,237
255 3,847,238

CLASS 178

5.6 3,848,082
6 3,847,732
3,848,083
6.8 3,848,084
7.2 3,848,085
7.3D 3,848,086
7.6 3,848,087
7.9 3,848,088
18 3,848,089

CLASS 179

1VL 3,848,092
1E 3,848,090
1N 3,848,091
15AS 3,848,093
18FA 3,848,094
100.3G 3,848,096
100.3V 3,848,095
146R 3,848,097
170D 3,848,098

CLASS 180

5R 3,847,239
9.5 3,847,240
54R 3,847,241
68.5 3,847,242
79.2R 3,847,243
89A 3,847,244

CLASS 182

49 3,847,245
78 3,847,246
81 3,847,247

CLASS 184

1R 3,847,248
6.12 3,847,249

CLASS 186

1R 3,847,250

CLASS 187

29R 3,847,251

CLASS 188

1C 3,847,252
2A 3,847,253
70R 3,847,254

CLASS 191

38 3,847,255
49 3,847,256

CLASS 192

.062 3,847,257
98 3,847,258
131R 3,847,259

CLASS 193

37 3,847,260

CLASS 195

1.4 3,847,737
1.8 3,847,738
28R 3,847,739
31F 3,847,740
3,847,741
36R 3,847,742
63 3,847,743
65 3,847,744
68 3,847,745
80R 3,847,746
96 3,847,747
109 3,847,748
127 3,847,749
142 3,847,750

CLASS 196

155 3,847,751

CLASS 197

1R 3,847,262
100 3,847,263
114R 3,847,264
129 3,847,261
172 3,847,265

CLASS 198

9 3,847,266
20R 3,847,267
40 3,847,268
41 3,847,269
140 3,847,270
168 3,847,271
177R 3,847,272
236 3,847,273

CLASS 200

61.08 3,848,099
3,848,100
150R 3,848,101
153L 3,848,102
256 Re.28,243
289 3,848,103

CLASS 201

32 3,847,752

CLASS 202

241 3,847,753

CLASS 203

34 3,847,754
57 3,847,755
92 3,847,756

CLASS 204

15 3,847,758
28 3,847,759
35R 3,847,760
40 3,847,757
67 3,847,761
98 3,847,762
148 3,847,763
149 3,847,764
151 3,847,765
157.1S 3,847,766
159.14 3,847,767
3,847,768
159.22 3,847,769
159.23 3,847,770
159.24 3,847,771
180P 3,847,772
180R 3,847,773
190 3,847,774
191 3,847,775
192 3,847,776
195P 3,847,777
195S 3,847,778
198 3,847,779
224M 3,847,781
224R 3,847,780
267 3,847,782
275 3,847,783
292 3,847,784
299 3,847,785
300 3,847,786
301 3,847,787
3,847,788

CLASS 206

.82 3,847,278
.84 3,847,277
44R 3,847,274
45 3,847,275
45.14 3,847,276
219 3,847,279
306 3,847,280
437 3,847,281
491 3,847,282

CLASS 208

11 3,847,789
25 3,847,790
3,847,791
60 3,847,792
70 3,847,793
88 3,847,794
108 3,847,795
111 3,847,796
114 3,847,797
209 3,847,798
210 3,847,799
236 3,847,800
308 3,847,801

CLASS 209

74M 3,847,283
81R 3,847,284

CLASS 210

7 3,847,802
8 3,847,803
22 3,847,809
23 3,847,804
33 3,847,805
45 3,847,806
46 3,847,807
66 3,847,808
96 3,847,810
108 3,847,811
150 3,847,812
232 3,847,813
237 3,847,814
242 3,847,815
3,847,816
297 3,847,817
321 3,847,818
444 3,847,819
457 3,847,820
488 3,847,821
500 3,847,822

CLASS 211

1.5 3,847,285
13 3,847,286

CLASS 213

111 3,847,288

CLASS 214

10 3,847,289
15E 3,847,290
27 3,847,291
75G 3,847,292
302 3,847,293
332 3,847,294

CLASS 215

1R 3,847,295

CLASS 219

10.55 3,848,105
3,848,106
10.79 3,848,107
69G 3,848,108
121L 3,848,104
130 3,847,287
146 3,848,109
525 3,848,110
543 3,848,111

CLASS 220

4F 3,847,299
85P 3,847,297
88B 3,847,298
269 3,847,300

CLASS 221

5 3,847,301

CLASS 222

14 3,847,302
66 3,847,303
105 3,847,304
166 3,847,305
203 3,847,306
386.5 3,847,307
3,847,308
3,847,309
3,847,310
473 3,847,311
501 3,847,312
507 3,847,313

CLASS 223

98 3,847,314

CLASS 224

2C 3,847,315
42.03B 3,847,317
42.1C 3,847,316

CLASS 225

100 3,847,318

CLASS 226

4 3,847,319
115 3,847,320

CLASS 227

7 3,847,321
132 3,847,322

CLASS 228

3 3,847,323

CLASS 229

1.5H 3,847,324
92.8 3,847,325

CLASS 233

32 3,847,327

CLASS 235

54F 3,847,345
61PD 3,848,113
61.11E 3,847,346
61.7R 3,848,112
131R 3,847,347
150.26 3,848,114
151 3,848,115
151.3 3,847,348
152 3,847,349
153AE 3,848,116
193 3,848,117

CLASS 237

8A 3,847,350

CLASS 239

63 3,847,351
101 3,848,118
133 3,847,352
184 3,847,353
317 3,847,354
424.5 3,847,355
507 3,847,159
662 3,847,356

CLASS 240

1.4 3,848,119
41BM 3,848,120
41.6 3,848,121
46.51 3,848,122

CLASS 241

20 3,847,357
32 3,847,358
34 3,847,359
82.5 3,847,360
152 3,847,361
191 3,847,362
245 3,847,363

CLASS 242

18.1 3,847,364
55.2 3,847,365
68.3 3,847,366
107.4 3,847,367

CLASS 244

13 3,847,368
42R 3,847,369
77A 3,847,328
122AD 3,847,329

CLASS 248

14 3,847,330
74PB 3,847,331
99 3,847,332
125 3,847,333
158 3,847,334
166 3,847,335
252 3,847,337
294 3,847,336
419 3,847,338
503 3,847,344

CLASS 249

1 3,847,339
18 3,847,340
27 3,847,341
85 3,847,342
202 3,847,343

CLASS 250

213VT 3,848,123
260 3,848,124
272 3,848,125
3,848,126
321 3,848,127
336 3,848,128
339 3,848,129
369 3,848,130
388 3,848,131
439 3,848,132
469 3,848,133
471 3,848,134
476 3,848,136
496 3,848,135
497 3,848,137

CLASS 251

6 3,847,370
65 3,847,371
248 3,847,372
298 3,847,373
367 3,847,374

CLASS 252

8.55D 3,847,823
12 3,847,824
3,847,825
3,847,826
48.8 3,847,827
56R 3,847,828
63.5 3,847,829
186 3,847,830
316 3,847,832
425 3,847,833
431R 3,847,834
439 3,847,835
465 3,847,836
468 3,847,837
470 3,847,831
500 3,847,838
522 3,847,975
544 3,847,839

CLASS 254

88 3,847,376
158 3,847,377
175.7 3,847,378

CLASS 259

4 3,847,375

CLASS 260

2.1E 3,847,840
2.2R 3,847,841
3,847,842
2.5AS 3,847,844
2.5BB 3,847,843
2.5M 3,847,845
13 3,847,846
17R 3,847,847
18S 3,847,848
19EP 3,847,849
20 3,847,850
22CB 3,847,851
23XA 3,847,853
23H 3,847,852
23.7A 3,847,855
23.7M 3,847,854
29.6RB 3,847,856
29.6RW 3,847,857
33.2R 3,847,858
33.4UR 3,847,859
38 3,847,860
40R 3,847,861
42.14 3,847,862
42.18 3,847,863
42.52 3,847,865
45.75B 3,847,864
47CP 3,847,867
3,847,870
47CZ 3,847,869
47XA 3,847,866
47R 3,847,868
63BB 3,847,871
65 3,847,872
75R 3,847,873
77.5AN 3,847,874
78TF 3,847,878
78L 3,847,877
78R 3,847,875
3,847,876
79.5B 3,847,879
3,847,880
80.77 3,847,881
83.5 3,847,882
83.7 3,847,883
85.5R 3,847,884
3,847,885
89.1 3,847,886
93.5 3,847,887

94.9GD 3,847,888
112R 3,847,889
112.5 3,847,890
3,847,891
3,847,892
112.7 3,847,893
153 3,847,894
187 3,847,895
210E 3,847,896
211R 3,847,897
211.5R 3,847,898
236.5 3,847,899
239D 3,847,904
239.1 3,847,900
239.3A 3,847,902
239.3B 3,847,905
239.3P 3,847,901
3,847,903
239.55C 3,847,906
240A 3,847,911
3,847,912
240D 3,847,908
240F 3,847,909
240H 3,847,907
243C 3,847,913
248AS 3,847,914
248CS 3,847,915
3,847,916
248NS 3,847,910
249.6 3,847,917
256.4F 3,847,918
3,847,919
3,847,920
268BC 3,847,921
268R 3,847,922
281 3,847,923
292 3,847,924
293.73 3,847,925
293.75 3,847,926
294.8F 3,847,927
295F 3,847,928
296H 3,847,929
297R 3,847,930
307B 3,847,931
309.2 3,847,932
309.5 3,847,933
309.6 3,847,934
309.7 3,847,935
310A 3,847,936
319.1 3,847,937
326.1 3,847,938
326.14R 3,847,941
326.4 3,847,939
326.9 3,847,940
327C 3,847,943
327R 3,847,942
329.3 3,847,946
332.2R 3,847,944
332.5 3,847,947
338 3,847,945
340.3 3,847,948
3,847,949
340.5 3,847,950
343.6 Re.28,242
346.2R 3,847,951
347.8 3,847,952
376 3,847,953
397.1 3,847,954
397.2 3,847,955
404.8 3,848,047
413 3,847,956
429.5 3,847,957
439CY 3,847,958
439R 3,847,959
3,847,960
448.2N 3,847,961
448.8R 3,847,962
449M 3,847,963
465.2 3,847,964
465.3 3,847,965
468D 3,847,966
3,847,967
471A 3,847,969
482P 3,847,970
490 3,847,971
497A 3,847,972
501.12 3,847,973
518R 3,847,974
524R 3,847,976
525 3,847,977
535H 3,847,978
543P 3,847,979
552R 3,847,980
553R 3,847,981
558R 3,847,982
560 3,847,983
563R 3,847,984
3,847,985
564G 3,847,986
566B 3,847,987
566D 3,847,988
570.9 3,847,989
576 3,847,990
584B 3,847,992
584R 3,847,991
586P 3,847,993
600 3,847,994
601R 3,847,995
604AC 3,847,996
604HF 3,847,997
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6 : 233,580	17 : 233,573	233,597	34 : 233,582
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Plant Patents

6 : 3,649	3,650	3,651	3,652

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